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# SYMPOSIUM.

# THE FUTURE OF SANATORIUM TREATMENT.

#### A COLLECTION OF REPRESENTATIVE OPINIONS.

Tuberculosis is a national calamity. It is a medico-sociological problem with far-reaching ramifications. The Chancellor's scheme for a system of national insurance has done much to arouse interest in the study of the relationship of destitution and disease. Even the unheeding and ignorant are now recognizing that the arrest of ills is generally difficult, that the cure of many disorders is necessarily partial, and that a practical policy of prevention pays best. These considerations are particularly applicable to consumption and the other forms of tuberculosis.

Now that the country is awake to the terrible loss and widespread suffering entailed by tuberculosis, it is most important that everything likely to engender such a spirit of panic as may precipitate us into untried, extravagant, or inexpedient measures should be avoided.

It cannot be too persistently insisted that tuberculosis is a social and economic problem, as well as a subject for pathological research and a malady calling for therapeutic management.

If tuberculosis is to be arrested, a comprehensive policy must be adopted. Notification, dispensaries, sanatoria, tuberculin, and the like, each have their place and power; but to securely bind the Captain of the Men of Death, all links in our chain must be present, and each must lend its fullest aid.

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At the present time attention is being focussed on the sanatorium, and this agency for the arrest of tuberculosis is being weighed in the balance of professional and public opinion. It has seemed desirable that the experience of those who are engaged in the conduct of sanatorium treatment should be collected and rendered available. We have, therefore, through the kind co-operation of a number of experts in sanatorium management, been able to bring together a number of representative views, which we venture to think cannot but exercise considerable influence on those who are endeavouring to forecast the future of sanatorium treatment.

#### FROM F. W. BURTON-FANNING,

M.D., F.R.C.P.,

Hon. Physician to the Norfolk and Norwich Hospital, and to the Kelling Sanatorium; Hon. Consulting Physician to the Children's Open-Air Sanatorium, Holt; Author of "The Open-Air Treatment of Pulmonary Tuberculosis,"

The prominence given to the sanatorium treatment in the National Insurance Bill has naturally drawn some criticism on this method of combating consumption. The sanatorium treatment acts in a specific way against many of the important effects of pulmonary tuberculosis. In the vast majority of cases we can rely upon the régime to reduce fever, to promote appetite and assimilation of food, and to counteract many of the distressing symptoms. If the disease has not been allowed to get too much of a start, the treatment succeeds in procuring its more or less lasting arrest. At the end of three or four months' treatment the majority of suitable patients have not only regained their general health, but have surpassed their ordinary condition in appearance.

So far the treatment appears to be a highly satisfactory one, and for that important feature, fever, it accomplishes what no other therapeutic measure can bring about. But when sanatoria had existed a sufficiently long time in this country for the durability of their good effects to be tested, expectations became disappointed on account of the frequency of relapses. Taking all patients as they come to the sanatorium, some three-fourths are discharged with their health so far restored that they can return to their work. But we now ask, for how a long time will these people maintain their ascendancy over the malady? We find that all depends upon the stage of the disease and upon the effects it had produced upon the constitution when sanatorium treatment is commenced. Early treatment is essential if the best results are to be obtained.

Five years subsequent to their discharge we find that about half our patients have relapsed, but only a little more than half of these were originally placed under treatment at a properly early stage of their disease. Given early diagnosis and immediate treatment, I am satisfied that some three-fourths of our consumptive patients would be found well after the expiration of five years. Seeing that the improvement of sanatorium results in the future is to be brought about by securing treatment at an earlier stage of the disease, I have made some inquiries into the causes that lead to delay. I find that in about one-half of the patients who did not apply for admission until their malady was already too advanced, early symptoms had been disregarded or misinterpreted by them, and the doctor's advice had not been sought. This emphasizes the importance of the dispensary as an adjunct to the sanatorium. The early cases must be actively sought for, and the education of the people in regard to the disease must be continued.

In another third of the patients a doctor was consulted, but adequate measures were not promptly adopted. Early diagnosis of tuberculosis often depends on bacteriological examination of the sputum, and provision for the gratuitous performance of this is essential. In other cases perhaps the diagnosis was made at once, but the difficulty of securing the admission of a poor patient into a sanatorium seemed insurmountable to the doctor. In a much smaller proportion of patients (about one-thirteenth) want of means was said to have prevented their consulting a doctor, while in only one case did it appear that sanatorium treatment had been advised, but refused by the patient.

In my opinion this Bill provides us with the means of bringing about a vast improvement in sanatorium results. Prominence having been given to the provision of the machinery for early detection of the disease, the obstacles to the immediate reception of the patient at the sanatorium should be removed, while anxiety about the maintenance of his dependents is also taken away. Further, it must not be forgotten that the treatment's activity has been undoubtedly increased by the more general practice of auto-inoculation and perhaps of tuberculin injections. There is no reason why the treatment should not be more improved in the future.

#### FROM F. RUFENACHT WALTERS,

M.D., M.R.C.P., F.R.C.S.,

Physician to the Crooksbury Sanatorium; formerly Physician to the Mount Vernon Chest Hospital; Author of "Sanatoria for Consumptives,"

The proposed allocation of a large sum of money to the establishment of sanatoria and kindred institutions raises the question how far sanatoria have been a success, and to what extent they are likely to be needed in the future.

There is no reliable statistical evidence on this point; for the all-important question of degree of fever has been usually disregarded. as well as that of the conditions of life after leaving the sanatorium. Many profess themselves disappointed with the results of sanatorium treatment; but few, if any, of such critics have lived at a sanatorium, and some have expected impossibilities. After twenty-five years' experience of chest hospital and sanatorium, the impressions left on my mind are that where pulmonary tubercle attacks a healthy person temporarily depressed by illness, and systematic treatment is begun early and continued for a reasonable time, arrest is usually permanent and unconditional; but that the large majority of cases apply for treatment in too advanced a stage to recover completely, while in most cases the permanence of recovery depends on the after-conditions of life. If these are good, the patient may remain in good health for years; if not, he will relapse and die within a few years, whatever the treatment adopted. It should therefore be recognized that recovery from phthisis is conditional, and arrangements should be made to continue the necessary conditions after leaving the sanatorium.

To get the best results, all cases of chronic dyspepsia, anæmia, debility, or catarrh, should be systematically examined, and, if tuberculous or doubtful, placed under sanatorium conditions. Cases with tubercle bacilli in their sputum or with marked constitutional disturbance are already relatively advanced.

The chief advantages offered by a sanatorium, apart from the economic one resulting from treatment of a number together, are systematic medical supervision, hygienic training, a dust-free atmosphere, and facilities for rest in the fresh air day and night. These cannot be obtained in an urban home, nor in a place without a resident medical staff. Nor is the need for hygienic treatment likely to be removed by any future discovery.

Some people think that sanatoria would no longer be necessary if a reliable specific for tuberculosis were discovered, or even if tuberculin were systematically employed. This is based upon an altogether mistaken idea as to the causation of consumption. All sound medical treatment is directed against the causes of disease. Pulmonary tuberculosis owns two sets of causes—specific (infection with tubercle bacilli), and non-specific, which act chiefly by impairing the constitutional strength or the integrity of the lung tissues. Direct specific treatment can only remove the constitutional deterioration resulting from the tuberculous infection, leaving untouched the weakness which preceded and predisposed to the infection. While there is every reason to avail oneself of tuberculin in all suitable cases, there is an equally good reason to make use of the hygienic measures which

were proved to be useful many years before tuberculin was discovered. It is exceptional to find pulmonary tuberculosis attacking perfectly healthy people. Usually there has been some obviously predisposing cause—lack of proper food, stuffy rooms, a dusty atmosphere, some catarrhal ailment, etc. Even if tuberculin treatment restores to health, it leaves untouched the original hygienic errors and the consequent liability to relapse. No single remedy will remove these, but the training and treatment adopted in a good sanatorium will do so to a large extent. Pulmonary tubercle is often the sign of imperfect adaptation to the conditions of town life—to a relatively anaerobic existence. By sanatorium training the necessity for removal to the country may often be avoided.

Proper hygienic training of consumptives in their homes is full of difficulties, and often quite impossible. Without an object-lesson patients cannot realize what is wanted, or be induced to carry out the necessary details. Not only the patient, but also the responsible healthy members of his household, need such an object-lesson; and if we may judge by the nonsense that still finds a place now and then in the medical papers, residence in a sanatorium would also do much

good to some of our professional brethren.

With few exceptions, authorities are agreed that it is dangerous to treat cases of well-marked (febrile or extensive) tubercle with tuberculin unless they are kept at rest. The same is true of mixed infection requiring vaccine treatment. Obviously, a country sanatorium is a more suitable place for such treatment than a dusty city or a stuffy home.

There are two classes of patients admitted into most sanatoria, the first consisting of the ambulant afebrile cases, while the second comprises the more seriously affected patients with more extensive disease, and often also with mixed infection. If there were a very large further reduction in the number of those needing sanatorium treatment, leading to an excess of beds instead of the great excess of applicants familiar to our chest hospitals, the beds intended for the slighter cases could be used as a health camp for the convalescents who are well enough to work in town by day, but would be the better for pure air at night. These beds could also be used as a preventorium, to receive those who are "candidates for tuberculosis," and for those who are training for a colonial life. Graduated labour would be an important feature in this section. The nursing section, on the other hand, would be available for the treatment of a variety of catarrhal complaints in which pure, dust-free air is an advantage, and for many surgical cases. This is quite feasible since the advent of the motor-car. Near the sanatorium would spring up a health colony and open-air school for those who have been tuberculous or who come of a delicate

family, and who require healthier conditions than are obtainable in an ordinary village or town, together with a certain amount of medical supervision.

The addition to dispensary and sanatorium of such health camps and health colonies would strengthen what is still the weakest link in the chain of treatment. Many a consumptive recovers in the sanatorium, but relapses again in his old home. Had he more suitable quarters and a little more medical guidance, the relapse would often be avoided. The convalescent often cannot afford to change his employment; but if he could sleep in pure air, and in some cases also work in pure country air, he would become robust, and not become chargeable to his sick fund or parish. Some existing sanatoria might with advantage be converted to such purposes, and this would do even more good than the erection of more sanatoria without provision for after-care.

#### FROM H. HYSLOP THOMSON,

M.D., C.M.,

Medical Superintendent of the Liverpool Sanatorium, Kingswood, Frodsham; late Medical Superintendent of the Consumption Sanatorium, Bridge of Weir; Author of "Pulmonary Phthisis: Its Diagnosis, Prognosis, and Treatment."

The recent introduction of the National Insurance Bill in the House of Commons, and the provision included in it for a wider and more effective campaign against tuberculosis, have drawn public attention to the national importance of the problem, and have focussed public thought on the true position of the sanatorium in the aggressive warfare about to be carried on against this disease.

At the present time there is a tendency in certain quarters to separate the sanatorium from the other active agents in the field, to question or belittle its practical usefulness, and consequently to assign to it a position of minor importance in the campaign against the disease. This is a tactical error which has arisen from the fact that the real significance of variation of type in pulmonary tuberculosis and the necessary variation in treatment have not yet been fully appreciated.

In early and moderately reactive cases of pulmonary tuberculosis, sanatorium treatment when efficiently carried out yields better results than any other method of treatment at present known to science. It is no longer a haphazard empirical effort, but is based on sound scientific principles, and is applied to a carefully selected type of case. Its aims are threefold: (I) To control and arrest hyperinoculation; (2) to evoke beneficial auto-inoculation by graduated

walking exercise and manual labour; and (3) to call forth an active immunizing response by inoculations with tuberculin.

But in addition to its advance along scientific lines the sanatorium is also progressing along economic lines. For purposes of national economy it is recognized that treatment on any extended scale must be carried out at the least possible expenditure compatible with efficiency. Further, the marked improvement in the working capacity of the consumptive, which takes place as a result of treatment, is now recognized as a national asset of no small value. Not only is manual labour scientifically sound as a basis for auto-inoculation, but it is the means of developing and perfecting the working capacity of the patient, and is, moreover, the most trustworthy guide to the dosage and frequency of administration of tuberculin. Thus the sanatorium of the future will be a combination of sanatorium and industrial colony, moving along practical and scientific lines and yielding clinical and economic results, which will represent a saving of much life and money to the State.

But in close touch with the sanatorium movement two other essential factors in the campaign against tuberculosis have to be considered—namely, the anti-tuberculosis dispensary and the isolation home for advanced cases. The advocates of the dispensary system have unfortunately been recommending isolated and independent action, ignoring altogether the importance of co-ordination and harmonious co-operation. It is only by the intelligent and effective combination of all the forces at our command that complete victory over the ravages of tuberculosis will be attained.

What we hopefully anticipate in the near future is that the industrial sanatorium will work in active co-operation with the dispensary and isolation home, the whole scheme to be in active touch with existing health authorities. The dispensary will treat ambulant non-reactive cases of the disease, draft selected cases to the sanatorium, and be the organizing centre for the after-care of sanatorium patients. All advanced cases not admitted to the sanatorium, and those discharged from the sanatorium as incurable, which cannot be isolated at home to the satisfaction of the health authorities, will be transferred without delay to a suitable isolation home or hospital so as to obviate their return to swell the infective ranks of the enemy.

The prospects of obtaining a specific for tuberculous disease are still remote, yet it is possible that by the intelligent and interdependent action of the various attacking forces now in existence, the grim spectre of tuberculosis, like its predecessor leprosy, will eventually be swept from the country.

<sup>&</sup>lt;sup>1</sup> Hyslop Thomson: "The Selection of Sanatorium Patients for Treatment with Tuberculin," British Medical Journal, January 16, 1909.

#### FROM B. HOSFORD STEEDE,

M.A., M.D., B.A.O.,

Medical Superintendent Rostrevor Sanatorium, Warrenpoint, Ireland; late Resident Physician to the Royal National Hospital of Ireland for Consumption,

It will, I think, be universally granted that sanatorium methods are of fundamental importance in the treatment of consumption. Every physician, when treating a case of pulmonary tuberculosis, wishes to place his patient under the best hygienic conditions. He recognizes the great importance of properly regulating rest and exercise, of giving the most nourishing diet, and of maintaining the digestive system in the best possible condition. in fact, get his patient to follow as far as possible the principles of treatment that are carried out in every good sanatorium, whatever additional treatment he may or may not advise. And it must be conceded that the present general acceptance of the principles is due chiefly to the work done by sanatoria during the past ten or fifteen years. It will be granted, too, that simultaneously with the development of sanatoria, a remarkable change has occurred with regard to the views held in most cases as to the prognosis of tuberculosis. remember, twenty years ago, a well-known physician of high repute pointing out to me a young man of the farming class, who, he said, was in the earliest stage of consumption. He added, "That man will be in his grave in six months." Perhaps he was unduly pessimistic, but where now could a medical man be found who would take such a hopeless view of an early case of consumption? And must not the general change of view be ascribed chiefly to the known results of sanatorium treatment?

It is owing to sanatoria that what may be called the basis treatment of phthisis has received general acceptance. From a public-health point of view the good they have done has been chiefly indirect. The numbers treated have been, and perhaps must always be, relatively small, but every sanatorium should be an educative centre, demonstrating the best methods of treatment and affording object-lessons of their successful application.

For this purpose, as well as for their direct benefits on individual patients, sanatoria will always take a necessary part in any organized battle with consumption. Other measures (pure milk-supply, arrangements for care of advanced cases, better housing, suitable employment for arrested cases, etc.) are, of course, also of the greatest importance. But some sanatoria, as many as proper allocation of funds permit, are necessary.

Only let the sanatoria that are established be really good. Sana-

torium administration demands much patience, constant watchfulness, and sound knowledge. Much better have only a few sanatoria with the best administration than many indifferently and faultily conducted institutions. Now, when we may hope that many more sanatoria will soon be established, I would venture to urge as strongly as I can that the utmost care be taken to insure that in their administration the essential principles of treatment will be constantly borne in mind and thoroughly carried out. Otherwise there may be a danger that the movement may fall into some disrepute and true sanatoria may suffer.

#### FROM R. MANDER SMYTH,

M.D., M.R.C.S., L.R.C.P.,

Medical Superintendent, Linford Sanatorium, New Forest; late House Physician to the Brompton Hospital for Consumption.

Twelve or thirteen years ago I stated my conviction in the British Medical Journal and Practitioner, that by far the best treatment for consumption was the systematized mode of life in a private hospital, which was attempted by Bodington in this country; initiated by Hermann Brehmer in Germany, popularized and not improved by Dettweiler, and carried to the highest pitch of success by the original genius of Otto Walther of Nordrach. To-day there is little more to add to that statement. In the words of Sir Thomas Oliver, "Experience shows that of all means for treating pulmonary tuberculosis the open-air method' has given the best results."

Walther's success depended mainly not upon his personality, great as it was, but upon the thorough prosecution of five lines of equal importance in his treatment: I. Rest, which was made absolute in fever, the patient being treated as if in a typhoid state until the process began to be quiescent, as shown by a normal temperature. 2. Adequate feeding. 3. Life in fresh air. 4. Graduated exercise, or, as we now express it, auto-inoculation, the rationale of which was probably first thoroughly grasped by Walther. The building-up character of exertion undertaken with strict regard to variations of temperature during rest and exercise, was, I think, the most distinctive feature of his treatment, and it has been ingeniously adapted in this country to the performance of useful labour. 5. The constant vigilant supervision of the medical man, co-ordinating and controlling every detail of the patient's life.

To these means of combating tuberculosis has been added of late years the use of various tuberculins in various ways. Good results are reported, but personally I cannot say that I have yet seen any results in pulmonary tuberculosis which one could with the least certainty ascribe to the good effect of tuberculin. My experience of

such cases is, however, still limited, and it is quite possible that, as Trudeau and others allege, there may be a lesser tendency to relapse after the use of tuberculin. In a chronic and insidious disease like tuberculosis, subject to periods of latency, activity, and quiescence, often of many years' duration, such a statement must be exceedingly difficult of proof, needing a lifetime of experience and many thousands of cases. We are, I fear, only at the threshold of success in serumtherapy in pulmonary tubercle. On the contrary, no one who has worked long in a sanatorium can be in any doubt whatever of the very large percentage of arrests made in the earlier stages of the disease.

The main difficulty, however, in treating consumption in private sanatoria, is that we get so few cases in the earlier stages of the disease. In the Linford Sanatorium, which I built in 1898, and which has since trebled its numbers, the percentage of cases in an early stage is at present 20 per cent. In another well-known sanatorium upon the East Coast I am informed by the courtesy of the medical director the proportion is six cases out of thirty-four, a percentage of nearly 18. I have no doubt that this is the usual average in private institutions,

As regards results I will not give statistics of my own sanatorium, as being perhaps open to suspicion of a personal bias, but I take the latest report of the King Edward VII. Sanatorium. There the percentage of arrests in Group I. of early cases was 56·I per cent., and 31·8 per cent. more are said to be "much improved." The arrests in Groups II. and III. of advanced cases amounted to 14·8 per cent. only. These figures speak for themselves.

It is hardly fair to decry sanatorium treatment as it has been decried in certain quarters, when four out of five cases sent there for "cure" are in more or less advanced stages of the disease. Much can be done in the advanced stages, but the chances of recovery are only one-fourth as great.

To be able to secure the arrest or great improvement of nearly nine-tenths of the earlier cases of a disease, which fifteen years ago was regarded as usually incurable, appears to my mind not only success, but success which warrants all the support the State can give it.

The work of the National Society for the Prevention of Consumption is already producing excellent results, which I hope will have influence on the housing problem, which, while it exists, will effectually check the stamping out of tubercle. I have seen in a village not far removed from the King's Sanatorium, and almost adjoining the colossal palace of a local magnate, hovels dating from Tudor times, with port-hole windows, and cellars, whose inhabitants live more like cave-dwellers than men of the twentieth century. Sanatoria may

be multiplied and success obtained, but we cannot hope to stamp out tuberculosis while such conditions obtain throughout the country, and the Socialist may well derive justification for his creed from the fact that where out of equal numbers one rich person dies, two poor persons perish of tuberculosis.

As the first to build a sanatorium for the treatment of consumption in this country, I regard with the greatest satisfaction the resolve of the Government to devote at last a much-needed grant for the erection of sanatoria for the poor, and I look confidently to the time when the worker will not be allowed to go on till he or she breaks down from tubercle, but when sanatoria will deal mainly with those in the pre-tuberculous condition and the earliest stages of the disease, in which rapid and permanent results may be expected, instead of being, as they are too often now, merely homes for the dying.

#### FROM DAVID LAWSON,

M.A., M.D., F.R.S.E.,

Senior Physician, Nordrach-on-Dee Sanatorium, Banchory.

What, it has been asked, is to be the future of consumption sanatoria? Have they played their part in medicine as a nine days' wonder, and are they to be relegated to the limbo of a forgotten past along with countless other failures? Some claim that this will be their lot. There are others who believe that sanatoria are destined to develop their usefulness still further, and to multiply their machinery for service and increase in number. The writer is of opinion that the latter view rather than the former is justified, and for these reasons. Throughout the progressive nations of the world there now exists a growing sense of the magnitude and complexity of the evil of tuberculosis, and also an appreciation of the urgent necessity for dealing effectively with this death-dealing disease. Alongside of this sense of danger there stands the firm conviction, born of experience, that of the numerous weapons which must necessarily be employed in the fight against this many-sided malady, there is no single instrument so effective as that of the sanatorium. Sanatorium treatment is not an infallible specific, but by its means a larger number of recoveries have been secured than by any other known method of treatment. Moreover, it possesses this solid advantage over all other forms of treatment, that whilst it directly cures and educates the patient, indirectly it educates his friends as well, so that they forthwith become recruits in that great army of fighting men and women who are actively engaged in opposing the spread of tuberculous disease to the healthy members of the nation.

Apart from their purely humanitarian value in alleviating suffering, repairing shattered health, and restoring working capacity to those stricken by the disease, the commercial value of sanatoria has been conclusively demonstrated. Insurance companies, especially in Germany, spend large sums annually in providing sanatoria for their clients. They do so, not from any sentimental considerations, nor sickly feeling of pity for the unfortunate sufferers. They do so mainly because they now know that it pays them better to save the lives of insurers rather than allow them to die slowly, and that in sanatoria they possess the most effective agent which exists for securing the saving both of life and funds. What the directors of insurance companies have proved the individuals of each nation must at length realize and act upon. Civilized nations have entered upon a propaganda for the building of sanatoria, and the number of sanatoria is bound to multiply in every progressive country.

There are some persons who hold that the long-looked-for specific cure for tuberculosis, when it has been found, will sound the death-knell of sanatorium as we now know them. The writer is not of that opinion. On the contrary, he thinks that any such discovery, when it does arrive, will in all likelihood greatly increase the demand for scientific treatment in sanatoria. As far as we can see it seems not unlikely that the panacea will be of the nature of a vaccine, and if so its administration to be effective will require special experience and no little skill in administration. The present is, and to a greater extent the future will be, the age of the specialist, and the public will turn to sanatoria where they can secure reliable treatment at the hands of men who have made such treatment an object of special study.

Limitations of space preclude any consideration of the evolution of treatment within sanatoria, the relationship of sanatoria to tuberculosis dispensaries and the rôle of farm-colonies, and other valuable agencies, all of which possess their well-defined sphere of usefulness in any comprehensive scheme which has for its object the abolition of the great white plague.

#### FROM F. K. ETLINGER,

M.R.C.S., L.R.C.P.,

Medical Superintendent of the Cotswold Sanatorium.

It must be recognized now that in dealing with the problem of consumption amongst the poorer classes the establishment of sanatoria for open-air treatment, though an essential part of any scheme of attack, is insufficient by itself, and is possibly not even the most important part. The problem is of such magnitude and gravity that it is absolutely essential for it to be considered from a strictly

economic point of view, all considerations of sentiment being put aside. Compulsory notification, dispensaries, home-visiting, hospitals for incurable cases are each of them as important as sanatoria, and no scheme is complete or efficient unless it embraces all these components. State control is most desirable, as without it there must be wasteful overlapping and incompleteness. There is no likelihood of sanatorium treatment being superseded, but on the contrary, it tends to become more essential since the carrying-out of special measures, such as treatment by inoculation, cannot be done justifiably unless the patients are under contant observation and control.

I should like to see State control of all sickness in all classes with a much more widespread development of the sanatorium movement, embracing the treatment of practically all diseases. It is obviously desirable that nobody should be allowed to be sick at home, because (1) it is impossible for them to be treated properly; (2) science loses a great part of the lesson which is to be learnt from that particular case of illness; (3) the work of many other people is necessarily interfered with, with no advantage whatever either to themselves or to the patient. When we reach, as we shall do, this Utopian state, sickness will take its proper place as something objectionable and to be ashamed of, instead of being, as now, a subject of general and absorbing interest, and the description of symptoms the commonest variety of conversation.

## FROM JAMES D. MACFIE,

M.B., CH.B.,

Medical Superintendent of the Benenden Sanatorium of the National Association for the Establishment and Maintenance of Sanatoria for Workers suffering from Tuberculosis; late Senior Assistant Medical Officer, King Edward VII. Sanatorium, Midhurst.

There are three types of cases of pulmonary tuberculosis, which every physician has to distinguish in forming a prognosis and advising for treatment—(1) Those which are going to get well; (2) those which will regain their working capacity if properly treated; and (3) those who cannot get well under any condition. For all these cases sanatorium treatment must be the best. The first type is placed under the most favourable conditions, and taught how to live and model the future life; the second type gets proper treatment, and, provided his resistive power is sufficiently good, the disease will become quiescent; while the life of the third type will probably be prolonged, and certainly will be prevented from spreading the disease. That the State may in time be able by disciplinary, social, and medical means to stamp out consumption, there can be but little doubt; until then, however, there must be some means provided for treating

existing cases. At present we have no better means than those supplied in sanatoria. Many people think that anyone can run a sanatorium. This is a complete error. The head of a sanatorium is as much a specialist as is an oculist: he must learn his work in sanatoria; he must be keen on it; he must possess a great deal of common sense and patience; and he must have administrative capacity. In any institution administrative power is the best hand-maiden medicine can possess. The medical director of a sanatorium must possess the confidence of his patients, and he must try to explain the rationale of his treatment; this can be done by giving periodic lectures.

A well-conducted sanatorium ought to have on its staff a resident bacteriologist well versed in vaccine-therapy. In spite of what one reads in the public press, I am of opinion that tuberculin, when employed, ought to be used in conjunction with sanatorium treatment. An efficient steward is also necessary for the complete success of the sanatorium of the future. The day of the grossly expensive sanatorium is at an end; what is now wanted is a plain, well-built, easily-managed building. Any money that is over ought to be used in paying the staff well, for the life is such an isolated one that, unless this is done, the right men will not be secured.

Graduated labour under close medical supervision is so far the most scientific way of treating pulmonary tuberculosis, and will no doubt be employed in the sanatoria which one hopes to see built in the near future, particularly in those for workers, such as is contemplated in the Chancellor's scheme.

#### FROM ESTHER CARLING,

M.D., L.S.A.,

Medical Superintendent, Kingwood and Maitland Sanatoria.

If the suggestions made by the Chancellor of the Exchequer as to the national treatment of tuberculosis went no farther than they have gone at present, much would have been accomplished. At last the country is awake and thinking, and it is not likely to sleep again. It even believes it has discovered, among other things, that Mr. Lloyd George's scheme of providing sanatoria is altogether belated and out of date (!). It knows a much more excellent way, and from peaceful acquiescence in doing nothing it demands a complete chain of agencies to deal with the question from every side, to prevent, to educate, and to cure. While holding in doubt the proposals that would make sanatoria the most important element in the campaign, it gives indication of its earnestness and judgment by responding to an

appeal for tuberculosis dispensaries in London to the extent of many thousands of pounds in a few days. Whatever has called forth such an extraordinary output of activity should merit the gratitude of every person who, during the last ten years, has been labouring in this field, and the cry for a complete as against a partial treatment of the subject will be echoed most urgently by those who have worked most intimately in connection with the disease, from whatever side they have attacked it. To the criticisms raised against sanatoria, however, it can fairly be replied that they have not had a fair chance while they stood alone. By themselves they have been expected to do the work which is now to be divided, and rightly divided, into six or eight different compartments. Their value, when their actual scope is defined and limited, can well be left for time to prove, and perhaps the Chancellor is not so belated after all in making special provision for the most expensive and at the moment least popular part of the campaign.

In a disease like consumption, where the soil is no less important than the seed, all conditions that make for greater vigour and resistance must be of infinite value, and anyone who has watched the rapid gain of colour, energy, flesh, and general fitness under sanatorium conditions could never be persuaded that this feature of the campaign was unimportant. Rather will it become of wider value, when as a result of a general scheme of notification and observation, earlier cases are traced out and educated to the necessity of prompt and immediate treatment. The "health colony" with its wholesome conditions, its graduated work and opportunities for either the sanest form of country holiday or an education in country life and work, can well be left to stand or fall on its merits in the days to come.

#### FROM GEORGE A. CRACE-CALVERT,

M.B., M.R.C.S., L.R.C.P.,

Resident Physician, Vale of Clwyd Sanatorium, Llanbedr Hall, Ruthin, North Wales.

Many people regard sanatorium treatment as a failure because they have failed to grasp the true character of pulmonary tuberculosis. It is, of course, a chronic disease resulting in actual destruction of lung-tissue, and no treatment can in a few weeks cure disease that has possibly been going on for months, or overcome a "tendency" which may have existed for years. Tuberculosis is unlike any other infectious disease, except syphilis, and whatever the treatment, and even though the disease be arrested or eradicated, the diseased organ can never be the same as before the attack, and can only be repaired and never renewed, and in all cases the process takes a long time—in fact,

much longer than is ever reckoned on or allowed for. Further, many patients return to their old conditions of life, under which they contracted the disease, because they are more congenial than following a sanatorium régime, or because they cannot do otherwise, and then when they relapse the sanatorium is blamed for the failure. Until it is realized that cases must be treated early before the disease has got a hold, that even early cases must be treated for at least three months, and that they must then follow out treatment rigidly for two years—until such time sanatorium treatment must be a failure.

Again, all cases should be sent to the sanatorium before being sent to the country or seaside by themselves or in charge of a nurse, so that they may learn how to live and what to do, otherwise often the time is wasted and the patient gets worse for want of a practical knowledge. Sanatorium life is not mere living in the open air and eating large quantities of food, but consists essentially in the regulation of the patient's whole life under the best possible conditions, so that not only may the existing disease be arrested, but also the tendency to relapse be combated.

Sanatorium treatment, combined with the judicious use of tuberculin under constant supervision, is, I believe, the most efficacious treatment that we have at present for pulmonary tuberculosis, but like every other treatment it cannot work miracles, and is subject to limitations, some of which are natural, and others, as I have indicated, are artificial and can be avoided.

Besides actual treatment the sanatorium is useful for teaching people how to live and how to avoid infection, and thus becomes an agency in prevention, but it must not be regarded as the chief weapon in the great fight against tuberculosis, for after all it is only a small but necessary part.

#### FROM THOMPSON CAMPBELL,

M.D., C.M.,

Medical Superintendent of Ellerslie Sanatorium; late Medical Officer Bridge of Weir Sanatorium and Ochil Hills Sanatorium; Author of "Sanatorium Treatment of Pulmonary Tuberculosis."

"Sanatorium Treatment" is a much abused term, and its outlook for the future depends greatly on a proper conception of what is implied in it. The name should be retained and applied to "the treatment of patients suffering from pulmonary tuberculosis under the best conditions by resident physicians who have devoted special attention to the disease, every means being employed which will assist in its cure." Such being the definition, and such the actuality in all institutions worthy of the name, to belittle sanatorium treat-

ment is in my view an evidence of stupidity or ignorance. The chief requisite to secure for the sanatorium the fair trial which it has not vet received is early diagnosis of the disease; and to attain this it is necessary that medical practitioners should have opportunities for becoming more familiar with the earliest manifestations in the lungs. as by the provision of post-graduate courses of instruction in chest hospitals or dispensaries, for many students graduate without coming in contact with cases other than advanced ones. It is also necessary to impress on medical practitioners the advisability of making an early examination of the sputum in every case where such is expectorated, for frequently cases have come under my care in which the sputum was not examined until months had elapsed. education of the populace in the manner adopted by the National Association will also prove of great value in bringing early cases to a sanatorium for treatment, some of my best results being secured in individuals who, on their own initiative, requested their medical attendant to examine a specimen of their sputum. Again, the recognition of the true value of sanatorium treatment, and therefore the support to be accorded to it in the future, will depend in part on a realization of the importance of the period of treatment being 'proportioned to the stage of the disease, and on an average provision should be made for a residence of six months, in my experience. The financial aspect of this matter has in the past prevented many a case from being treated to a successful issue; but with a more generous provision of such institutions we may look forward to better success in the warfare. Home treatment has, by some, been favourably contrasted with institutional; but, having attempted the former, and watched a number of practitioners attempt it, I can only compare the difference between the two methods to walking in darkness and in sunshine.

### FROM GODFREY BROOKES DIXON,

M.R.C.S., L.R.C.P., L.S.A.,

Medical Officer to the City Sanatorium, Yardley Road, Birmingham, and to the Out-Patient Department for Tuberculin, Edmund Street, Birmingham.

So far, sanatoria are the centres where pulmonary tuberculosis can be most successfully treated. Sanatorium principles—i.e., continuous fresh air, dieting, graduated exercise and work, partial and complete rest, the proper treatment of sputum, the education of patients with a view to preventing spread of infection—will remain as the basis of any treatment which is to give the best results.

Of late we have been told that the tuberculosis dispensary and the tuberculin dispensary are making the sanatorium useless. Any

system, to successfully grapple with the treatment and prevention of tuberculosis, must comprise these three departments, they must be, and should be, worked together as units of a complete scheme.

It has been said that tuberculin can do all that sanatoria have done, and more. I think that better results are obtainable with tuberculin in a sanatorium than out of one; and tuberculin can undoubtedly be used on a wider range of patients when the patients are in an institution than when they attend as out-patients. On the other hand, the long and expensive period of sanatorium treatment may be greatly shortened if, after an initial stage of sanatorium plus tuberculin treatment, the patient continues his treatment with tuberculin in a dispensary. This is certainly the case in early stages of the disease where a patient's resistance is good.

Sanatoria can greatly increase their utility by having several beds set apart for the observation of "contacts" or "suspects" when, by diagnostic inoculations and careful observations an early diagnosis can usually be made. An early diagnosis is, in the majority of cases, the salvation of the sufferer.

Medical officers in sanatoria, by a course of lectures and by correcting faults of personal hygiene in their patients, should so change their habits that, instead of being disseminators of disease they become centres of knowledge.

#### FROM S. VERE PEARSON,

M.D., M.R.C.P.,

Medical Superintendent, Mundesley Sanatorium.

In respect to the near future of sanatorium treatment, I consider the following points are of importance: (1) The profession and the public should be brought to realize what sanatorium treatment is, and hence to appreciate fully all the functions of these institutions. For at present sanatoria are looked upon as little more than places where arrangements for procuring an abundance of clean air and good food are provided, and the full value of their various influences—e.g., the educational and preventive—are not appreciated. (2) It should be made not only possible but the rule for doctors to diagnose the disease early. (3) The sanatoria should be properly co-ordinated with the other medical services, preventive and curative. (4) They should be staffed by physicians who are fully trained in this branch of medicine, and a necessary corollary to this is that these should receive good salaries.

In respect to the more remote future, the sanatorium treatment of tuberculosis should become unnecessary in Great Britain well before the end of this century, because by that time the disease should be extinct in this land. But even when clean air to breathe always and everywhere is considered as essential to health as pure water to drink, and tuberculosis has become extinct; even when medical practice has become largely preventive, and the great advances in national health which are to be expected during this century have become accomplished—even then institutions under skilled and close medical supervision will be useful, both as curative establishments and as schools of hygiene. Naturally these will be placed in districts where the cleanest air is procurable.

Ampler education, and those more ideal systems of taxation and of land tenure which all hope to see, should gradually banish many of the environmental causes of disease; but it will be very difficult to get rid of much of the overcrowding of cities, and of the unnatural methods of refuse and excrement disposal now so widely used. Again, personal ignorance and negligence in matters of hygiene, though comparatively rare, will still be met with, and the natural ills, accidents, and infirmities which flesh is heir to will remain. It will probably, therefore, for long enough remain convenient for the State to possess institutions where curative treatment and the teaching of hygienic living are provided under the guidance of skilled, resident medical experts.

#### FROM H. E. WATSON,

M.B.,

Medical Officer of the Sidlaw Sanatorium, Auchterhouse, near Dundee, Scotland,

At the present time, when the prospect of increased provision of sanatorium treatment for the industrial classes is before us, it is well that full consideration should be given as to whether the sanatorium is likely to justify its existence in the future or not. That the results of sanatorium treatment have not been as good as was at first anticipated is now generally admitted.

There can be no doubt that in the past too much importance has been attached to rest as a factor in the treatment of consumption in its afebrile stage, with the result that patients have left sanatoria in a poor state of physical development. Many have been unable to work, and certainly a considerable proportion have been unwilling. Since graduated labour, with the theory of auto-inoculation as its basis, has been adopted as part of the treatment of phthisis, after-results have shown marked improvement. As an advocate of this form of treatment, I am convinced that sanatorium methods must be developed on these lines if the greatest possible success is to be attained. At the present time, when the available accommodation for phthisical patients is so restricted, it is important that a proper selection of cases suitable

for treatment by this method should be made. Such selected casespreferably after a probationary stay in hospital-can be drafted to the sanatorium, where, on the lines so admirably organized by Dr. Marcus Paterson, of Frimley Sanatorium, they can gradually pass from the lightest exercise up to full navvy work. In my experience, patients quickly grasp the fact that work under such ideal hygienic conditions as the sanatorium affords is beneficial, and, as a result, they soon display remarkable keenness in carrying out the tasks allotted to them. Already such a system seems to give every promise of success, as by this method of treatment patients who would otherwise spend the remainder of their days in chronic invalidism can be sent out from the sanatorium fit to resume at once their duties and responsibilities. I am convinced that, if graduated labour is generally adopted in the future as one of the most important factors in the treatment of phthisis, results will be achieved which will justify the establishment of such institutions in larger numbers. In short, the sanatorium of the future must not only educate patients in the general hygiene of the disease and the means of preventing its spread, but must also strive to send them back fit for their daily work.

## FROM W. ROWLAND THURNAM,

M.D., B.S.,

Medical Superintendent, Nordrach-upon-Mendip Sanatorium.

The future of sanatorium treatment will depend very largely on the doctors who have to select the cases for treatment in sanatoria. A tree is known by its fruits, and in the case of industrial sanatoria their value will be measured by the number of patients who are able to return to their occupation after a period of treatment. Although in sanatoria for the well-to-do such a satisfactory result of treatment is not always to be expected, the reputation of sanatorium treatment will be largely based on the "cures" that are turned out. After an experience of more than eleven years, I am bound to say that these results depend to the utmost extent on the type of case which is sent to the sanatorium, and therefore on the doctors who advise cases to go there. If medical men will only send cases in an early stage, the future of sanatorium treatment is bound to be a brilliant one.

## ORIGINAL ARTICLES.

# STATE INSURANCE AND THE MACHINERY FOR THE DETECTION AND TREATMENT OF TUBERCULOSIS.

By R. MURRAY LESLIE,

M.A., B.SC., M.D.,

Physician to the Royal Hospital for Diseases of the Chest, London.

At the recent Annual Congress of the Royal Sanitary Institute held at Belfast, Lord Dunleath devoted his presidential address to the subject of Tuberculosis, and stated that in the United Kingdom the number of sufferers from pulmonary consumption at the present moment was probably well over half a million, involving an industrial loss to the community estimated at about £40,000,000 per annum. On the generally accepted assumption that the actual incidence of the disease in definite recognizable form is about ten times the mortality, there are no less than 650,000 persons suffering from the disease in the United Kingdom.

The official recognition by the Chancellor of the Exchequer in the National Insurance Bill of the responsibility of the State in regard to the prevention and treatment of tuberculosis has been received by members of the general public, to whichever political party they may belong, with universal satisfaction, and by the medical profession with the enthusiastic approval which it deserves. The public owe a deep debt of gratitude to the Chancellor for his whole-hearted advocacy of a scheme to provide State funds to assist in the great fight against tuberculosis. A large number, however, of those best qualified to judge, while fully in sympathy with the beneficent intentions of the framer of the Bill, are strongly opposed to the proposed restrictions governing the allocation of these funds. I shall deal with the various criticisms seriatim, but before doing so would like to review briefly what is actually being done at the present time both by voluntary and State effort, independent of State or Friendly Society insurance.

# Preventive Measures for dealing with the Tuberculosis Problem.

Preventive measures comprise not only efforts directly designed for the prevention and cure of tuberculosis, whether voluntary, municipal, or governmental, but also all general hygienic measures

As regards the various measures directly designed against the prevention of consumption in this country, the pioneer work has undoubtedly been done through the instrumentality of voluntary agencies and associations, though it is only right to say that all such voluntary efforts have, as a rule, been carried out with the hearty co-operation of the Medical Officers of Health and other State authorities. I might specially mention the work of the National Association for the Prevention of Tuberculosis, the Central Tuberculosis Dispensary Fund, the Women's National Health Association of Ireland, the Women's Imperial Health Association of Great Britain, the National Health Society, the various local Health Societies, and the Charity Organization Society. The influence of these bodies through the agency of domiciliary visitation, tuberculosis exhibitions, lectures and health talks, distribution of health pamphlets and caravan tours in rural districts, has gradually permeated the various sections of the community. They are endeavouring to provide a sound knowledge, where such knowledge is most required, of the causes of the disease, and the best measures for prevention and treatment. One might also refer to the prominent place given to papers on tuberculosis at the annual congresses of such semi-public bodies as the Royal Institute of Public Health and the Royal Sanitary Institute, the reports of which receive wide publicity in the public Press, and also to the examinations held by these bodies by the Incorporated Institute of Hygiene and the National Health Society, principally designed to test the knowledge of school-teachers, health-visitors, and others in the primary laws of health.

There is also the splendid work done by the great *voluntary hospitals*, and more particularly by the various special hospitals devoted to diseases of the chest, many of which are provided with country sanatoria; indeed, the educative, detective, and curative work inaugurated and carried on by these institutions has not yet been fully realized. As regards *tuberculosis dispensaries*, these have been more directly influential in preventing the spread of consumption in the districts where they are situated than probably any other agency which has yet been instituted, and the rapidity with which new tuberculosis dispensaries and stations are being established all over the Metropolis and elsewhere is the best testimony of their efficacy in this direction.

With regard to sanatoria, there is much divergence of opinion as to their permanent value. Most of the sanatoria for the poor have been established by voluntary effort in connection with chest hospitals, and independently of these, though of late not a few municipal sanatoria have also been constructed, and there are also county sanatoria both in England and Scotland. There is a general consensus of opinion that sanatoria have, after all, only a limited sphere of influence, and are of permanent value only in those early cases with very few symptoms or physical signs. It is in the case of these alone that there is any reasonable hope of a permanent cure. The frequency of relapse is only too well known to those of us who are attached to the staffs of chest hospitals, particularly in those instances—alas! but too common—where the patient returns from the perfect conditions of the sanatorium to his badly-ventilated dwelling or workroom. The educative influence has, however, been incalculable.

A certain amount of direct preventive work in connection with tuberculosis has undoubtedly been done as the result of State and municipal effort. Notification of tuberculosis is undoubtedly the crux of the whole question, and is an essential link in the chain of agencies devoted to prevention, detection, and cure of the disease. Voluntary notification is gradually being replaced by compulsory notification, and the recent enactment of the Local Government Board, making it compulsory for hospitals to notify all cases of tuberculosis coming for treatment, constitutes a great step forward in the tuberculosis campaign.

The segregation of advanced cases of tuberculosis in infirmaries where the patients can no longer be a source of infection to their domestic circles is of the utmost value, and one of the most crying needs is the increase of such institutions for the reception of advanced cases.

#### The Treatment and Cure of Tuberculous Cases.

The treatment of tuberculous cases is carried out in sanatoria, hospitals, infirmaries, and by private medical attendants. I have already indicated the limitations attaching to sanatorium treatment. As regards hospital treatment, here, too, the field is a comparatively limited one. As I indicated in a paper read at the British Congress on Tuberculosis in 1901, the rôle of the out-patient department at chest hospitals ought to be that of early diagnosis and detection rather than of treatment and cure. Many of the patients come with the disease far too advanced to give any hope even of its arrest, much less of a permanent cure. In regard to the early cases, permanent cures are often effected by means of tuberculin and other modern methods of treatment, though here again, as in the case of sanatorium patients, there is a great danger of relapse when the home and work-room conditions are unsatisfactory, as is so often the case.

Infirmary treatment, I believe, must be regarded as alleviative rather than curative, the main value of infirmary treatment consisting in the segregation of advanced cases.

As regards treatment by the family doctor, this at present is largely confined to tuberculosis as it exists among the better-off classes of the community, where the disease is much less common, and where the doctor's recommendations regarding diet, fresh air, and other hygienic requirements can be readily carried out. In the case of the so-called labouring classes, among whom tuberculosis is so rampant, he can only treat a comparatively small section, chiefly comprising the dependents of the wage-earner. As long as the patient is a wage-earner himself, his treatment is at present largely alleviative and symptomatic, so as to enable him to continue his occupation. As soon as the wage-earner is attacked by the disease in an acute or active form he is no longer able to pay his doctor's fees, and therefore drifts to one of the hospitals or dispensaries, though it is somewhat different in rural districts, where no such hospital treatment is available.

It would not be amiss in this connection to refer to the large amount of quiet, unostentatious, and in most cases unremunerated, preventive work done by the general medical practitioners, partly in their capacity as family medical advisers, and partly by giving their voluntary services to the various local Health Societies.

Such, then, in brief outline, is the present machinery for the detection and treatment of tuberculosis. Let us consider how far the proposed allocation of State grants will assist in the campaign against this dread disease.

#### The Tuberculosis Provisions of the National Insurance Bill.

The Chancellor of the Exchequer, in introducing the National Insurance Bill, stated that all the resources of this country would be placed at the disposal of science to crush out this terrible disease of consumption, and then went on to explain that his proposed method for effecting this beneficent object was to assist local charities and local authorities to build sanatoria throughout the country, for the establishment of which a sum of £1,500,000 was to be provided, and a further sum of £1,000,000 per annum for their maintenance after construction. The only arguments he advanced in his speech in favour of such provision was a vague statement to the effect that doctors think they can cure consumption in this way, and that in Germany they have done great things in this respect. "For the purpose of administering this sanatorium benefit, local Health Committees, shall make arrangements to the satisfaction of the Insurance

<sup>1</sup> See Clause 15 of the National Insurance Bill.

Commissioners with persons or local authorities having the management of sanatoria, or other similar institutions approved by the Local Government Board, for the treatment therein of insured persons entitled to sanatorium benefit under the Act."

By a curious provision, married women and mothers of families were not to be eligible for sanatorium benefit, owing to administrative difficulties. It is only the worker who is to receive medical benefit, and accordingly children under working age were also to be excluded from sanatorium benefits, although it is computed that no less than 12,000 children (one-fifth of the total number) die from consumption in the United Kingdom every year.

Such, in brief, is the nature of tuberculosis benefits in the original Bill.

Owing, however, to the strong representations and criticisms passed upon the above provisions, Mr. Lees Smith, M.P., moved an amendment, which was accepted, to the effect that the treatment of consumption provided by the Bill should include any of the alternative methods that modern experience may suggest, including the establishment of dispensaries, open-air shelters, and domiciliary visitation by nurses. This amendment remedies a very serious defect in the Bill.

Dr. A. Hillier, M.P., criticized the extremely unstatesmanlike proposal to limit provision of treatment to insured persons, pointing to the self-evident fact that if the spread of infection is to be checked every consumptive person must have facilities for treatment. The force of this argument was recognized by the Chancellor, who suggested that a new optional benefit might be given by which the right to treatment should be extended to wives and families of insured persons. The cost of this, he thought, might be shared in equal proportion between the local authorities and the Treasury, the option being left to the local authority. As has been pointed out, this proposal is merely a grant in aid to local authorities, who will undertake extra expenditure for the cure of consumption. The concession of the Chancellor that he was prepared to make an annual grant of two and a half million pounds for maintenance, if local authorities were prepared to undertake the treatment of consumptive dependents of insured persons, will doubtless be of vast assistance to public health authorities in combating the disease. Mr. Lloyd-George, on August 4, stated that the facilities now granted for extending the sanatorium treatment to women and the children of insured persons, and the extension of treatment of tuberculous cases, practically committed them to a real national campaign against consumption.

#### Defects in the National Insurance Bill.

The most glaring defects are referred to in the last two paragraphs, and, as indicated, there is every prospect of their being remedied. Had the Bill been passed in its original form without these amendments there would have been a great waste of public money, as the clauses dealt with only one aspect of the question-the curative one-and that only to a very limited extent, while the much greater questions of prevention and early detection would have been left untouched. Even from the curative point of view the usefulness of sanatoria is extremely limited, as already indicated. I am not decrying in any way the great value of sanatorium treatment in dealing with early cases, but it is at the same time absurd, as Dr. Arthur Latham states, to expect sanatorium treatment to do the impossible, and be regarded, as it seems to be in certain quarters, as a certain cure for consumption. "The sanatorium," as Dr. Latham points out, "is only a link, however important a one, in a comparatively long chain, embracing, inter alia, dispensaries, hospitals, homes for advanced cases and the dying, careful disinfection, and after-care of patients when they leave the sanatorium, together with adequate assistance to the breadwinner and his family while he is under treatment." Of course, it is difficult to over-estimate the educative value of sanatoria. Many authorities are of the opinion that there ought to be sanatoria for the cure of early cases, sanatoria for the reception of advanced and hopeless cases, agricultural and industrial institutions for the reception of patients after leaving the sanatoria, and separate sanatoria for children combined with openair schools. Besides, as Dr. Edward Squire points out, it would be practically impossible, even if it were desirable, to treat all cases of consumption in sanatoria during the whole period when treatment was required. Except in the earliest stages, it is impossible to expect complete arrest of the disease after three months' treatment, and in most cases treatment must be continued at home; and even when the patient is able to follow his employment on his return from the sanatorium, some medical supervision will be required. Such home treatment means not only prescribing drugs or injecting tuberculin, but must include preventive precautions for the sake of those in contact with the infected person. It is, therefore, absolutely necessary that the Health Committees be empowered to supply nurses for home visits, to establish tuberculosis dispensaries and open-air shelters, and even provide extra milk and suitable food should such be required.

The most notable omission in the Bill, however, consists in the lack of legislative power to insist on the compulsory removal of cases which, in the opinion of the Medical Officer of Health, are direct

sources of danger to their families and dependents. It is the segregation of the advanced cases to infirmaries and special institutions, on the recommendation of the Medical Officer of Health, that would constitute one of the most important means of preventing the spread of the disease. There is also the important question of providing tuberculosis open-air schools for children, for which no provision is made in the Bill. There is also no provision whatever for the aftercare of the patients with the view of preventing relapses and preserving their home circle from infection. The establishment of farms and industrial colleges ought to be an essential part of the insurance scheme.

There is, further, the question of public anti-tuberculosis education, which at present is more or less in the hands of voluntary societies. A correct knowledge of hygiene, particularly in regard to diet, ventilation, clothing, cleanliness, regular habits, and such-like, is absolutely essential. All these and other domestic preventive measures should be under the supervision of the local Health Committee, who must make definite arrangements for adequate remuneration for all the work done by medical men, who must no longer be expected to work gratuitously for the public weal. Measures to provide pure milk free from tuberculous taint are also of the greatest value. Facilities for bacteriological and research work must also be provided.

#### Conclusions.

Summing up, it may be said that prevention is infinitely more important than cure, and therefore a large proportion of the funds to be allotted to tuberculosis benefits should be devoted to preventive and detective measures, so that, as the British Medical Journal well puts it, "a proper balance may be struck between the prevention and cure of the disease." The Bill ought to be so modified as to empower the Health Committees to use the money apportioned to them for the treatment of consumption in whatever ways seem to them best to stamp out the disease, instead of restricting the Committees to the mere provision of sanatorium treatment, which, as a matter of fact, could only deal with one-tenth of the cases, leaving nine-tenths to be treated by private medical men, and by tuberculosis dispensaries and similar agencies. Dr. Williamson, of Paddington Dispensary, computes that no less than 36,000 out of the 60,000 cases in the Metropolis will ultimately be supervised and treated at the tuberculosis dispensaries.

Sir William Osler is of opinion that there ought to be a close association between tuberculosis dispensaries and general hospitals. A case in point is the association of the Paddington Tuberculosis Dispensary with St. Mary's Hospital. At the present moment the

Royal Hospital for Diseases of the Chest and the Central Tuberculosis Dispensary Fund are considering the advisability of establishing a joint tuberculosis station for the parishes of Shoreditch and Finsbury, and so join forces in the crusade against consumption in the neighbourhood by securing an early diagnosis of the disease and regular supervision of all "contacts." These dispensaries and similar institutions will be able to utilize to the full the State sanatoria which are to be provided, particularly if powers will later be granted to compulsorily remove such patients as in the opinion of the Medical Officers of Health are a source of danger to the community.

There are many other questions which might be discussed in connection with the great anti-tuberculosis crusade, but I have purposely restricted my remarks to the question as it concerns the National Insurance Bill now before Parliament.

# THE REPORT OF THE ROYAL COMMISSION ON TUBERCULOSIS: A CRITICAL SURVEY.

By JAMES MILLER, M.D., F.R.C.P.E.,

Pathologist to the Royal Victoria Hospital, Edinburgh, etc.

THE direct cause of the formation of the Royal Commission on Tuberculosis, which has just issued its final report, was the following pronouncement made by Koch at the British Congress on Tuberculosis, held in London in 1901: "I should estimate the extent of infection by the milk and flesh of tuberculous cattle, and the butter made from their milk, as hardly greater than that of hereditary transmission, and I therefore do not deem it advisable to take any measures. against it." Owing to the high authority from which this statement came, owing to its directly controverting the opinions generally held by health authorities, and owing to the intrinsically serious nature of the point at issue, it became necessary immediately to test this matter, and to decide, if possible, whether or no Koch's statement were true. The terms referred to the Commission were as follows: I. Whether the disease in animals and man is one and the same. 2. Whether animals and man can be reciprocally infected with it. 3. Under what conditions, if at all, the transmission of the disease from animals to man takes place, and what are the circumstances favourable or unfavourable to such transmission.

#### The Conclusions of the Commission.

The Commission has been at work for as nearly as possible ten years. During that time they have investigated the question at issue from many points of view. Three interim reports have been issued-1904, 1907, 1909—and now we have the final summing up, the whole forming a most weighty contribution to the question under discussion. The following is a résumé of the results as detailed in the final report:

Three types of the Bacillus tuberculosis are distinguished—the human, the bovine, and the avian. The human type is characterized by luxuriant growth on artificial media by relative non-virulence for rabbits and for bovines. Pigs are more susceptible than calves. The chimpanzee monkey and the guinea-pig are very susceptible. The bovine type grows relatively slowly on artificial media. It is very virulent for rabbits and calves, also for pigs, monkeys, and guinea-pigs. The avian type of organism grows well upon artificial media, forming a slimy white growth which is easily emulsified. Fowls are very susceptible to the action of the avian organism. Rabbits and mice are also susceptible, but in no other mammal does this type produce by itself progressive tuberculosis. In none of the three varieties does the organism alter its characters by growing on artificial media.

As regards the distribution of these types, important results have been obtained. In a series of thirty cases of spontaneous bovine tuberculosis, strains of tubercle bacilli have been isolated and their characters studied. In every case the organism corresponded in cultural and pathogenic characters to the bovine type.

A series of 128 cases of human tuberculosis have been examined as regards the type of organism found. These are divided by the Commission into two groups: (1) A group consisting of twenty cases of lupus; and (2) a group including examples of tuberculosis in many different parts of the body, principally lung, bronchial glands, intestine, and mesenteric glands. Of the second group, consisting of 108 cases, nineteen yielded bovine tubercle bacilli only, and five both human and bovine bacilli. Analyzing the results in this group still further, forty-two were cases of pulmonary tuberculosis, the material being either a portion of tuberculous lesion obtained postmortem or sputum. In only two of these was the bovine organism isolated. They were both sputum cases. So far as could be ascertained, both these cases were primarily pulmonary, with no evidence of tuberculous disease elsewhere. Care was taken to eliminate the possibility of the sputum containing butter or milk which might contain bovine bacilli.

In twenty-nine cases of what appeared on post-mortem examination to be primary abdominal tuberculosis, fourteen yielded bovine bacilli only, and thirteen human bacilli only, two cases containing a mixture of human and bovine organisms.

The remaining cases were as follows. Three cases of general tuberculosis in which no primary lesion could be determined, yielded only the human type of bacillus; three cases of tuberculous meningitis yielded only the human type. In five cases of bronchial gland tuberculosis, three yielded only the human type, two gave both types. Of nine cases of cervical gland tuberculosis, six yielded the human type and three the bovine type. In fourteen cases of joint and bone tuberculosis, the human type of organism was found thirteen times. Cases of testicular, kidney, and suprarenal tuberculosis yielded only the human type.

Regarded from the point of view of the avenue of infection, it will thus be seen that in only two cases did lesions of the respiratory tract yield bovine bacilli alone; in two others that organism was present along with the human type. On the other hand, in cases where the infection was probably alimentary in origin, including among these cervical gland infection, out of thirty-eight cases seventeen yielded bovine organisms alone, and in two they were found along with human.

Looked at from the point of view of the age of the cases from which the material was obtained, a very striking result is obtained. Out of the 108 cases examined, fifty-five were adolescents or adults; of these only five yielded bacilli of bovine type. The remaining fifty-three cases were children, and nineteen of these yielded bovine bacilli alone or with the human type. It will thus be seen that the bovine organism is very much more frequently a cause of infantile than of adult tuberculosis.

The results of the examination of the twenty cases of lupus are particularly interesting. It was found that only three of the viruses isolated behaved, as regards their pathogenic properties in animals, like those found in the internal lesions of human tuberculosis. One of these corresponded to the bovine type, two resembled the human. Of the remaining seventeen viruses, eight showed the cultural characters of the bovine bacillus, but were markedly less virulent for calf, rabbit, monkey, and guinea-pig. It was, however, found possible in two cases to raise the virulence of the strain by passage through the calf and the rabbit. In eleven cases the lupus strains showed the cultural characters of the human type of bacillus. As regards their pathogenicity, this, as a rule, was lower than the average for the human type.

The Commission also investigated swine tuberculosis as regards

the type of bacillus found. All three types—human, bovine, and avian—were found infecting the pig.

Tuberculous lesions in the horse examined in a similar way yielded only the bovine type of organism.

As regards the character of tissue lesion produced by the various types of bacilli, it was found that there is no essential difference in the formation of the tuberculous lesion produced experimentally in animals by the bovine and human types. Lesions produced by the avian bacilli generally differ from those produced by the mammalian.

Regarding the fate of the bacilli after injection, it was found that in a resistant animal bacilli might be present, and remain for long without producing marked or characteristic lesions, although there was often evidence that the bacilli had multiplied.

Some interesting and important results were obtained regarding the excretion of bacilli by the mammary gland after injection. It was found that bacilli injected in considerable quantities either subcutaneously or intravenously were present in the milk within a few hours or days, and that the excretion continued although no lesion of the udder was present.

The pronouncement of the Commission upon the most important and exceedingly difficult question of modification of the bacilli, of the possibility of transforming one type into another, is not a decided one. All attempts to modify the pathogenic properties of the three types by means of artificial cultivation failed absolutely. Attempts were also made to modify different types of the organism by subjecting them to prolonged residence within the bodies of animals. Thus human bacilli were introduced in collodion capsules into the peritoneal cavity of birds and kept there for varying periods—over a year in some cases; but in no case was any alteration observed in the type of the organism.

Similar experiments were performed with bovine organisms with the same result. Bovine bacilli were inoculated into dogs. In two cases out of a large number the organism, when recovered, showed the characters of the human type. Bovine organisms were also passed through chimpanzees and baboons without producing any alteration in type.

A large number of experiments were performed by inoculating calves with human bacilli. When the organisms were recovered after, in some cases, over five hundred days, no alteration in type was observed.

The finding of two different types of bacilli in lesions in an individual might be brought forward as an argument in favour of alteration. While considering this as a possible explanation, the Commission regard it as improbable. The chief support of the idea

that such modification of type does take place is to be found in the discovery of what may be called transition forms in certain of the lupus strains. To use the words of the Report itself. "There were isolated from six lupus cases bacilli which, although they had the cultural characters of the bovine tubercle bacillus, and retained these characters throughout the subsequent investigation, showed a lower virulence for the calf, rabbit, monkey, and guinea-pig than the boying bacilli, and, in the case of the two last animals, lower virulence than that of the human bacilli. From two other lupus cases cultures were obtained like those of the bovine bacillus, but which were of even lower virulence for the animals mentioned. In nine other cases of lupus the bacillus isolated had the cultural characters of the human type, but was remarkable in that it showed lower virulence for the monkey and guinea-pig than the human bacillus. The cultures obtained in these seventeen cases were not mixtures of different types of tubercle bacilli. The repeated investigation of the cultures from each case and the results of their injection into animals showed this. Here, however, we have eight cases in which the culture was bovine in character, but had a virulence for animals below that of the bovine bacillus, and nine cases in which the culture was human in character. but had virulence below that of the human type of bacillus. These facts are very striking, inasmuch as no such divergences from recognized types were encountered among the numerous strains of bovine tubercle bacilli isolated from bovine tuberculosis, or among human tubercle bacilli isolated from internal human tuberculosis." Two strains isolated from equine tuberculosis showed similar divergence of type.

The Commission suggest that either these strains represent independent fixed types, or that they are modifications of bovine or human strain. In favour of the latter view was the fact that, by passage through animals, certain of these strains developed pathogenic properties characteristic of one or other type.

The section of the Report which will be scanned with greatest interest is that devoted to a consideration of the results in relation to the terms of reference.

Regarding the first term of reference—i.e., whether tuberculosis in animals and man is one and the same—the Commission conclude that, although there are undoubtedly the two types of organisms, human and bovine, commonly isolated from lesions in men and cattle, and although there is no direct evidence that one type is, or can be, transformed into the other, yet "there remain only slight cultural differences on which to found the conclusion that the human and the bovine types represent two distinct organisms. We prefer to regard these two types as varieties of the same bacillus, and the lesions

which they produce, whether in man or in other animals, as manifestations of the same disease." More than that, "our researches have proved that, in a considerable proportion of cases of the human disease, the lesions contain, and are caused by, bacilli which are in every respect indistinguishable from the bacilli which are the cause of tuberculosis in cattle. In all such cases the disease, therefore, is the same disease as bovine tuberculosis."

As to the second term of reference—i.e., whether animals and man can be reciprocally infected with tuberculosis—the Commission concludes that it is difficult to infect domestic animals with small doses of human tubercle, and even with large doses the lesions are sparse and non-progressive. Further, in not a single instance was the human type of organism isolated from tuberculosis naturally occurring in cattle and fowls, and only rarely was it discovered in pigs.

On the other hand, the bovine type of organism was isolated from man in a very considerable proportion of cases, chiefly those in which the main lesion was abdominal, and chiefly in young children. This the Commission considers as undoubted evidence that infection can occur from animals to man. They therefore conclude that "mammals and man can be reciprocally infected with the disease" (tuberculosis).

Regarding the third term of reference—i.e., the conditions under which transmission of the disease from animals to man takes place and the circumstances favourable to such transmission—one has only to remember that out of 128 cases of human tuberculosis fully investigated, thirty-three yielded bacilli of the bovine type. These thirty-three were mainly cases of abdominal tuberculosis chiefly in young children. In view of the fact that almost all attempts to modify the type of organism experimentally have failed, and that therefore these types may be regarded for practical purposes as stable, one is not surprised that the Commission concludes "that the evidence which we have accumulated goes to demonstrate that a considerable amount of the tuberculosis of childhood is to be ascribed to infection with bacilli of the bovine type transmitted to children in meals consisting largely of the milk of the cow.

"In the interests, therefore, of children and infants, the members of the population whom we have proved to be especially endangered, and for the reasonable safeguarding of the public health generally, we would urge that existing regulations and supervision of milk production and meat preparation be not relaxed; that, on the contrary, Government should cause to be enforced throughout the kingdom food regulations planned to afford better security against the infection of human beings through the medium of articles of diet derived from tuberculous animals.

"More particularly we would urge action in this sense, in order to avert or minimize the present danger arising from the consumption of infected milk. And in this connection it may be convenient for us to repeat certain facts observed by us in reference to the conditions tending to the elimination by the cow of bovine tubercle bacilli in her milk; facts, in our opinion, of such importance that they formed the

subject of our Third Interim Report.

"Bovine tubercle bacilli are apt to be abundantly present in milk as sold to the public when there is tuberculous disease of the udder of the cow from which it was obtained. This fact is, we believe, generally recognized, though not adequately guarded against. But these bacilli may also be present in the milk of tuberculous cows presenting no evidence whatever of disease of the udder, even when examined post-mortem. Further, the milk of tuberculous cows not containing bacilli as it leaves the udder may, and frequently does, become infective by being contaminated with the fæces or uterine discharges of such diseased animals. We are convinced that measures for securing the prevention of ingestion of living bovine tubercle bacilli with milk would greatly reduce the number of cases of abdominal and cervical gland tuberculosis in children, and that such measures should include the exclusion from the food-supply of the milk of the recognizably tuberculous cow, irrespective of the site of the disease, whether in the udder or in the internal organs."

#### Critical Considerations.

It must be admitted that none of the pronouncements of the Commissions in their final report have come as a surprise. This is partly due to the fact that three interim reports have already appeared; but it is also due to the fact that other commissions as well as individual observers working along the lines of the matter at issue have come to very similar conclusions. It is generally admitted that Koch, following Theobald Smith, was correct in drawing a distinction between the two important types of bacilli, and in stating that human tubercle bacilli were relatively non-pathogenic for bovines. Further experiment has merely gone to support this view. But all recent work goes to show that his further statement regarding the importance of human infection from bovines quoted above was absolutely erroneous. This statement was based largely upon the rarity of primary intestinal tuberculosis as gathered from the post-mortem records of the Berlin hospitals. But since that date other statistics have been gathered, and cases have been collected showing that the condition is by no means rare. At the Washington Congress, 1008. Koch shifted his ground somewhat. He admitted that bovine bacilli can occur in disease in man; "with few exceptions, however, these

bacilli are but slightly virulent for man, and remain localized. The few known cases in which the bovine type of bacillus is said to have produced a general and fatally progressive tuberculosis in man appear to me not to be above suspicion." In the face of the convincing facts brought forward by the Commission as well as by other observers, such as Fibiger and Jensen, such a statement could not now be made. Koch, however, went on to point out that fatal nonpulmonary tuberculosis forms only a very small part of tuberculosis in general-one-twelfth, according to him. The other eleven-twelfths of the fatal cases are pulmonary, and "up to date in no case of pulmonary tuberculosis has the tubercle bacillus of the bovine type been definitely demonstrated." So recently as the present year Möllers (Deutsch. med. Wochenschrift, No. 8, p. 341), analyzing a series of 632 cases of phthisis, including fifty-one by himself, finds only one doubtful case of bovine infection. This is another matter upon which the Commission brings weighty evidence to bear. In the sputum from two cases of phthisis they repeatedly found only the bovine type of organism, and in the bronchial glands from two cases they found the bovine type along with the human. Certainly the number of cases is small, but in conjunction with the large percentage of bovine infections elsewhere, it, as certainly, is not an aspect to be neglected.

The question of the mutability of the different types of the tubercle bacillus may be one of paramount importance. observers, such as Calmette, believe that the small percentage of bovine pulmonary infection is due to the alteration in type which the organism undergoes either in the lung or on its way there. The results of the investigations of the Commission on this question, although not uniformly against alteration of type, are on the whole in favour of permanence of the different types. This, again, is a matter on which observers differ. Eber, in a number of papers, 1 states that he has been able to alter the biological characters of three strains of the human organism out of seven by the passage of infected guineapig organs through the peritoneal cavities of calves (inoculating subcutaneously at the same time), so that they have become virulent for bovines. Similar statements were made by the Commission itself in its Second Interim Report. In this final report, however, they admit that on further investigation they believe that no such alteration occurred, and that the apparent alteration in virulence was due to admixture with a bovine strain. Cobbett,2 who carried out the original experiment, came earlier to a similar conclusion,

The conclusions of the Commission upon the possibility of

<sup>1</sup> The most recent of Eber's articles appeared in the Centralblatt für Bakteriologie, I Abt., Orig., Bd. 59, H. 3, p. 193. 1911.

<sup>2</sup> Cobbett: Journal of Pathology and Bacteriology, Vol. 14, p. 563. 1910.

infection of milk in cases where there is tuberculosis in the cow of other parts than the udder are of the utmost importance, and will seriously modify the view taken by health authorities as a general rule. This country is in many respects behindhand in the management of its milk-supply. Steps are being taken both by private individuals and by public bodies in the direction of wiser policy. The report of the Commission will do much to strengthen the hands of those who are working towards the purification of this indispensable article of diet.

# A CRITICAL IMPRESSION OF THE ANNUAL CONFERENCE OF THE NATIONAL ASSOCIATION FOR THE PREVENTION OF CONSUMPTION.

BY HALLIDAY G. SUTHERLAND,

M.D.,

Medical Officer to the St, Marylebone Dispensary for the Prevention of Consumption.

THE Annual Conference of the National Association for the Prevention of Consumption was opened at the Caxton Hall, London, on July 19, by the following gracious message from His Majesty the King:

"As patron of the National Association for the Prevention of Consumption and other forms of Tuberculosis, I congratulate all who will take part in the Annual Conference which assembles to-morrow. I sympathize deeply with the Association's work, so far-reaching in its influence upon the future of the human race. I note with interest the important questions to be dealt with at the Conference, and the names of the eminent authorities by whom the meetings will be conducted and addressed."

At the Annual Meeting following the Conference, a loyal message of thanks was tendered to his Majesty. The Conference was entirely occupied with a discussion of the best ways in which to administer the grants voted in the Budget for dealing with tuberculosis, in accordance with the Chancellor's National Insurance Scheme, the five sessions being divided as follows:

- I. Education, i.e., the spread of knowledge about tuberculosis among the community at large, by lectures, literature, exhibitions, etc., and in the school.
- 2. The Machinery of Detection .- The hospital, the tuberculosis dispensary, municipal and private effort.

3. Treatment.—The sanatorium, its educational use, home treatment, treatment of the advanced cases.

4. After-care of patients.

5. The Administrative and Financial Aspects of the Bill.—The cost to the community of tuberculosis, the use of existing accommodation.

## The Address by Mr. John Burns.

In these circumstances it was singularly fortunate that Mr. John Burns, President of the Local Government Board, was present to deliver the introductory address. In a statesmanlike speech he covered most of the field, dealing with the various factors which make for the extermination of tuberculosis, indicating their relative importance from the administrative side, and contending that they are all interdependent. It was an extremely sympathetic utterance from a Minister who has mastered the work of his own department, having an excellent knowledge of what is wanted, and, what is more to the point, what he himself wants. The limitation of his speech was that it did not touch the Insurance Bill, and this criticism also applies to some of the subsequent papers. Mr. Burns, as head of the Local Government Board, has given every encouragement to a progressive policy on the part of public health authorities. He has already anticipated the provisions of the Insurance Bill dealing with the treatment of tuberculosis. Dispensaries, sanatoria, and hospitals for advanced cases can at this moment be created quite apart from the Insurance Bill, and out of the public funds. The result of this is that so far as provision for treatment is concerned, the insured person will not enjoy any great advantage over the uninsured. It is true that the sick allowance may to some extent make treatment more possible in many cases. Let it not be forgotten, however, that the Insurance Bill does not provide for compulsory treatment, and that while Ios. a week may keep a man in a sanatorium, a grant of 5s. a week will most certainly not achieve this end. If one credits Mr. Burns with a knowledge of this, it was perhaps not unnatural that he left the Insurance Bill alone. He must further appreciate the fact that as principal officer in the public health service, he is also to be in some statutory relation to the local insurance committees, who apparently are to supervise and report on the work of the former. In such a proposition there is an absolute disregard of symmetry, and of the principles on which the Local Government Board was established in 1871.

## The Papers Presented.

The executive of the National Association initiated a new departure at this Conference in devoting most of the time to the reading of

papers by those who have the right to speak with expert knowledge on the various subjects. This policy was an unqualified success in that every aspect of the tuberculosis campaign was represented, and overlapping, so frequent on such occasions, was reduced to a minimum. Further, as delegates were present from all parts of the kingdom, it was well that they should have had an opportunity of hearing a reasoned and expert presentation of every part of the case.

#### Educational Communications.

Professor G. Sims Woodhead, in the introductory paper, advocated the extension of the teaching of hygiene from elementary to secondary schools. Money expended in prevention would be more than repaid by the increased cash value of a healthy community. Under favourable conditions tuberculosis was one of the most curable of diseases. The educational crusade should be a broad and common-sense one; and those who engaged in it should not be so insistent on a particular method, such as the sanatorium or dispensary. There was no universal panacea.

### The Rôle of the School.

Dr. Shrubsall, Assistant School Medical Officer to the London County Council, said that school teaching in its earlier stages dealt with the broad lines of personal hygiene, and indirectly touched tuberculosis. The Council's Education Committee had decided next winter to provide a course of six lectures for teachers on the manner in which they could assist in the anti-tuberculosis campaign.

## Tuberculosis Exhibitions and Caravans.

Sir William Younger spoke on "Tuberculosis Exhibitions and Caravans." The travelling exhibition was welcomed everywhere, and with its accompanying popular lectures to children and adults, should do much good.

#### The District Nurse and the Health Visitor.

Mrs. Howard Marsh read a paper on the work of the Cambridge branch of the League for Physical Education and Improvement, and the way in which the conditions under which infants lived could be improved by voluntary effort in the homes.

## Propaganda among the Friendly Societies and Trade and other Organizations of the Working Classes.

Mr. J. Lister Stead, Secretary Ancient Order of Foresters, described the anti-consumption propaganda carried on among friendly societies and trade unions.

## The Machinery of Detection.

The introductory address was given by Dr. R. W. Philip, of Edinburgh. Condemning the medievalism of limiting attention to pronounced cases of phthisis and to the mortality table, he said that medical students should be trained more exactly in physical and bacteriological methods. The method of out-patient departments needed revision. The doctor and nurse should raid the haunts of the bacillus in the patient's home, and hold a critical march past of the household. The results of this system of domiciliary visits from the dispensary were very striking. Compulsory notification was most desirable.

## Public Health Measures and the Hospital Out-Patient Department.

Dr. Niven, of Manchester, indicated that the great mass of tuberculosis was of human and not of bovine origin.

Dr. Cecil Wall, Assistant Physician to the Brompton and London Hospitals, advocated that a more active policy on the part of outpatient departments would be of great value in areas where these exist. Any congestion would be relieved by the Insurance Bill, as they would retain only their consultative function, so far as persons coming under the Insurance Bill were concerned.

## The Tuberculosis Dispensary and other Voluntary Efforts.

Dr. Halliday Sutherland described the work of detection at dispensaries.

Miss Bibby, of St. Pancras, described the working of a voluntary agency. Miss Cowen, of the Jewish Board of Guardians, and Dr. Hope, of Liverpool, also spoke.

#### Treatment.

Sir William Osler delivered the introductory address. The community were becoming more and more alive to the necessity of dealing with this insidious disease in its early stages. Doctors also needed educating. Like the rest of men, they had many sins, and one was carelessness in examination. How many doctors in cases of cough made a practice of always carefully stripping and examining the chest? This carelessness was especially prevalent in that most vicious type of practice which was about to be foisted on us; contract practice as a rule was bad practice.

Dr. Arthur Latham said that while fresh air and plenty of nourishing food were essential, the cardinal factor was a constant and skilled regulation of rest and exercise.

Dr. Jane Walker contended that many consumptives owed their

condition to underfeeding. Whatever might be best for ordinary people, consumptives should take three square meals a day.

Dr. Marcus Paterson indicated the possibility of educating the working classes.

Dr. J. J. Perkins advocated the educative value of sanatoria, even for cases who could not be permanently benefited.

Dr. J. E. Squire, Senior Physician to Mount Vernon Hospital, dealt with the effects of the Insurance Bill on home treatment. The consumptive who had to be treated at home was not in the least considered in the Insurance Bill. It remained to be seen whether a man would give up his wage of 20s. or 30s. a week and enter a sanatorium, leaving his family to exist on 10s. a week, or 5s. after three months. "Sanatorium benefits" under the Bill might well be extended to include some of the requirements for home treatment, such as the loan of a shelter in which he could sleep in the garden or on the roof, or the grant of a few shillings a week to enable him to occupy a separate room.

#### Open-Air Schools.

Dr. Ralph P. Williams, of Sheffield, described the working of an open-air recovery school.

Miss McGaw read a paper on Tuberculosis Schools, dealing in detail with the Paddington Tuberculosis School at Kensal House, the first of its kind in London.

## Advanced Cases, Segregation, and After-Care of Patients.

Dr. Maxwell Williamson, Medical Officer of Health for Edinburgh, illustrated the value of segregation by the fact that in four years following the establishment of a hospital for advanced cases the proportion of deaths from consumption in private houses had fallen from 73 to 51 per cent.

Mr. C. S. Loch said the Insurance Bill should make provision for after-care, unless this was left to charity, but the Bill would reduce charitable subscriptions.

Dr. H. W. McConnel, of Kelling Sanatorium, said that sanatoria could not possibly maintain their present satisfactory results unless the State-paid sanatoria were worked through the existing sanatorium machinery, and unless all working patients whose work was part of their treatment were freed from the action of the Bill.

## The Administrative and Financial Aspects of the Insurance Bill.

The introductory address was delivered by Dr. W. Leslie Mackenzie, who considered the problem in relation to the housing question. The cost to the community of tuberculosis was dealt with

in an able and striking address by Mr. Waldorf Astor, M.P. The use of existing accommodation was discussed by Dr. Nathan Raw, who suggested the use of empty fever hospitals and Poor Law institutions for treatment. The general and medical aspects of the National Insurance Bill were dealt with by Mr. Ernest I. Schuster, LL.D., who delivered a most damaging criticism of the Insurance Bill. The Bill did not enable any authority to compel patients to take sanatorium treatment. Further, the scheme was characterized by excessive centralization. In Germany the institutions administering invalidity insurance, though using sanatoria as much as possible, had begun to support voluntary dispensaries, and made loans for the erection of healthy dwellings for workmen and for other preventive purposes. The Bill should provide more definitely for the support of hospitals and district nurses. If it authorized a society to substitute hospital treatment for other benefits, the general health would be improved and the hospitals would secure a good source of income. The funds available for the health committees would probably not go very far; and such committees, by majority elective, would not win public confidence as authorities on hygiene. The system of free choice of doctors, apparently agreed on by the Chancellor of the Exchequer and the British Medical Association, was as objectionable as the contract system, both giving the best chance to the worst man, who would curry favour with committees and patients. Some of the classes excluded from the Bill's benefits lived under the worst conditions. Having regard to the composition of the health committees, it was very doubtful whether the most suitable cases would be selected for the sanatorium or whether the appropriate treatment would be supplied. The State scheme would be worse than useless unless voluntary effort helped by calling attention to suitable cases supplementing deficient funds, criticizing faulty administration, and enlightening the public as to the advantages of precautions and treatment. In short, the proposed measures regulating the general conditions of public health were of very problematical value.

## Voluntary Effort.

Voluntary agencies and the Bill received consideration, and the chairman, Dr. T. Dyke-Acland, Physician to Brompton Hospital, moved the following resolution: "That, while welcoming the increased facilities for dealing with tuberculosis outlined in the National Insurance Bill, this meeting of the National Association for the Prevention of Consumption desires to place on record its appreciation of the many valuable institutions for treating tuberculous cases which have been organized by voluntary effort, whether they be hospitals, sanatoria, dispensaries, or other organizations. These

institutions have been pioneers in the fight against consumption, and in the opinion of this meeting have established a special claim for consideration at the hands of those whose duty it will be to administer the provisions of the Bill."

Mr. C. S. Loch, Secretary of the Charity Organization Society, in seconding, said: "The whole treatment of phthisis has altered in the last few years. The sanatorium has been followed by the dispensary for the prevention of consumption. Both movements sprang out of voluntary effort. The dispensary has put a new weapon in the hands of the medical profession. They can now act largely on preventive lines, and by dealing with contact cases they find also the centre of infection. The National Insurance Bill proposes an expenditure of a million and a half on sanatoria, and though the word 'sanatorium' is used so as to apply to institutions other than institutions for the treatment of phthisis only, still readers of the Bill and of Mr. Lloyd George's speeches must consider that the new sanatoria now proposed to be built are to be chiefly sanatoria for phthisis. The Bill, so far as dispensaries and other similar agencies are concerned, leaves the position obscure. If there are to be more sanatoria, there must be more and better local agencies to utilize and co-operate with sanatoria. These limits-indeed the whole organization of the system-are lacking in the Bill. But however that be, one thing is clear. Our thanks are due to our leaders, to Dr. Philip and many others, lay and medical, men and women, who, working on voluntary lines, have shown us what to do. On the eve of the possible introduction of an entirely new national and obligatory system of insurance against sickness, it is but right and honourable to thank those to whom our debt is great, though the voluntary lines on which they worked may now be superseded-how far we cannot tell." The motion was carried nem. con.

## Conclusions.

There is no question that the Conference was an unqualified success, on which Dr. J. J. Perkins, Hon. Secretary of the National Association, and his co-workers are to be congratulated. The Conference brought out a general, strong, well-weighed opinion that while the Insurance Bill is good in principle it is bad in conception. It is difficult to imagine any other finding on the part of an independent scientific body.

The German Insurance Bill was ten years before the country, and even now there are over two thousand amendments awaiting consolidation into an Insurance Act. It may be objected that the official purpose for which this Conference was called only postulated "a discussion of the best ways in which to administer the grants voted in

the Budget for dealing with tuberculosis." As these grants, however, can only be administered through the machinery proposed in the Insurance Bill, it is obvious that the findings of the Conference directly apply to that measure.

Although some of the delegates expressed the opinion that more time should have been given for an open discussion, the general feeling was that ample opportunity was granted on the last day of the Conference. After all, discussion can only subserve two purposes—elicit new information, or correct the over-accentuation of any one point. Considering the wide range of subjects, and the very representative selection of speakers, there was little danger of the Conference suffering from want of discussion, while on the other hand, the time allowed for papers enabled the delegates to return to their constituencies with the crystallized knowledge gathered from those whose premier interest is in tuberculosis.

The fact of discussion being limited on this occasion was no doubt responsible to some extent for the debate being mostly to the point and of considerable interest. Those delegates who took part had experience in local administration, and were truly in search of knowledge.

## CRITICAL REVIEWS.

## TUBERCULOSIS AND VACCINE THERAPY.

By D. W. CARMALT JONES,

M.A., M.D., M.R.C.P.,

Assistant Physician and Director of the Department of Bacterio-Therapeutics to the Westminster Hospital; Author of "An Introduction to Therapeutic Inoculation."

## Principles of Vaccine Therapy.

The accepted principles of vaccine therapy are as follows: Natural recovery from tuberculosis, or any other infective disease, is due to the formation of specific antibodies to the infecting bacteria by the tissues of the infected person, through the exercise of the power of the tissues to form such antibodies to foreign albuminous substances in general, and bacteria in particular. When natural recovery is slow or imperfect, the required antibody formation may be stimulated by introducing dead bacteria in the form of vaccines into healthy sites.

These principles have been accepted for some years past, and no recent work has modified them nor has any means been found of applying the other established facts of immunity, such as the different properties of amboceptor and complement, to the methods of administration of vaccines. The theory of vaccine therapy, therefore, remains unchanged.

In practical directions, however, some advances have been made. The essentials of successful vaccine therapy are: (1) Accurate bacteriological diagnosis. (2) Correct administration, which includes (a) correct dosage, a very vexed question; and (b) prevention of autoinoculation.

The latter is a point which is involved in correct dosage, and receives special attention from the closer followers of Wright, since they hold that only doses within certain limits of size are efficient for immunizing purposes, so that *auto-inoculation*, or stimulation of antibody formation by the bacteria in the lesion, must be prevented by rest of the injured part during the administration of vaccines.

## Diagnostic Tests for Tuberculosis.

The methods employed in the specific diagnosis of pulmonary tuberculosis have been extremely well reviewed by Inman.<sup>1</sup>

Inman: Lancet, December 17, 1910.

Emery<sup>1</sup> has published an application of the Bordet-Gengou reaction to tuberculosis. The application of this method to syphilis is familiar as the Wassermann reaction. Various attempts had previously been made, chiefly in veterinary practice, to make use of it in the diagnosis of tubercle, but with very inconstant results. besides using a new method of preparing the hæmolytic mixture, has introduced the modification of using tubercle bacilli in standard suspension instead of tuberculin as an antigen. He incubates together tubercle bacilli and tuberculous serum in a series of tubes for periods of two and a half, five, ten, fifteen, and twenty minutes, and adds to each after incubation a suspension of red corpuscles capable of hæmolysis. He repeats the experiments, substituting normal for tuberculous serum. The complement will be fixed, and hæmolysis inhibited with any serum if exposed long enough to the tubercle bacilli, but it will be fixed much more quickly with tuberculous than with normal serum. Thus, after exposure to the tubercle bacilli for two and a half minutes, the complement of a tuberculous serum may be fixed, while with a normal serum twenty minutes may be required. Emery regards the time required for the absorption of the complement to be an index of the amount of antibody in the serum, and consequently of infection; the average time required with tuberculous serum is 7.1 minutes, and with normal serum 18°1 minutes.

A short time previously, Captain Nesfield, of the Indian Medical Service,<sup>2</sup> published independently a modification of the Wassermann reaction adapted to tubercle, using likewise tubercle bacilli as an antigen. By varying the amount of amboceptor in different experiments, by the addition of heated serum, the amount of complement being constant, he claims to be able to give an index of immunity.

These are most promising experiments, and it is greatly to be hoped that their usefulness will be confirmed. All the tuberculin injection tests reveal too much, since patients suffering from inactive lesions give positive results, and the best of the serum tests, an autoinoculation experiment with a series of opsonic indices, is too difficult and laborious for general use. A reliable macroscopic serum diagnosis would be an immense boon, and we may hope that these experiments are bringing it in sight.

## Treatment by Vaccines.

Nathan Raw8 expresses the opinion that phthisis is due to the human type of tubercle bacillus, and having tried human tuberculin

<sup>1</sup> Emery: "Immunity Reaction in Diagnosis," Hunterian Lecture, Lancet, February 25, 1911.

2 Nesfield: Lancet, December 31, 1910.

3 Raw, N.: Lancet, 8, 1911.

without success, has had bovine tuberculin prepared, with which he obtains good results, of which he gives the figures in all stages. He is emphatic that bovine tuberculin should be used in the treatment of human tuberculosis. He diagnoses either by the presence of tubercle bacilli in the sputum, or by the reactions of Calmette, Von Pirquet, or Moro. He follows the technique of Goetsch, and starting with an initial dose of  $\frac{1}{10000}$  of a milligramme, increases this to  $\frac{1}{100}$  in twelve weeks.

Waugh¹ has reported 181 cases of tuberculous glands in which all sources of reinfection were carefully removed—tonsils, adenoids, carious teeth, and so forth being all dealt with; 130 had no specific treatment, and 51 were treated in addition with inoculations of bacillary emulsion. In the cases treated with tuberculin, doses were given at weekly intervals, and gradually increased from  $\frac{1}{5000}$  to  $\frac{1}{100}$  of a milligramme, and in some instances to  $\frac{1}{5}$  of a milligramme. Of the inoculated cases 32 out of 51 were cured, and of the rest 101 out of 130. Waugh concludes that bacillary emulsion in these doses has not yet proved to be of value, but that constitutional disturbance does not occur, and extended trial is justifiable. He remarks that with these doses in no cases did rapid enlargement or abscess formation occur. He also emphasizes the errors inherent in the clinical diagnosis of tubercular glands.

This comparison of two series of cases similarly treated except for the single variant of inoculation is of the highest value, although the conclusions are disappointing to advocates of vaccine therapy.

In view of this work, and also of the large doses used by Camac Wilkinson<sup>2</sup> in phthisis compared with the exiguous doses used successfully by Wright and his school, one is forced to the conclusion that the optimum dose of tubercle vaccine is an exceedingly difficult question and far from being settled. There is no doubt whatever that with far smaller doses than those quoted above the rapid breaking-down of tuberculous glands and other tubercular lesions is frequently induced. In the case of single glands, some inoculators deliberately induce breaking-down in order to evacuate the pus thus formed, and find this the most rapid method of cure. The writers quoted above never see such effects. It seems possible that there may be a minimal dose of tuberculin which is an efficient immunizing stimulus, and a maximal dose which is also efficient, but that there are doses between these extremes which are likely to induce suppuration.

Waugh: Quarterly Journal of Medicine, July, 1911.
 Wilkinson: "Treatment of Consumption."

## Prevention of Auto-inoculation.

Wright and his followers¹ have hitherto been reluctant to treat phthisis by their minimal doses in view of the impossibility of controlling auto-inoculation, there being no means of immobilizing the lung. Some steps have, however, been taken to overcome this difficulty by the induction of artificial pneumothorax with nitrogen after the method of Forlanini, and first advocated by him in 1882.² Colebrooke³ has reported four cases treated by this method, and though inoculations have not been undertaken, he is satisfied that auto-inoculation can be prevented. For those who adhere to the small dose, this method marks a considerable advance.

 $<sup>^{1}</sup>$  Wright: "The Inoculation Treatment of Tuberculosis": in "Studies in Immunization."

<sup>&</sup>lt;sup>2</sup> Lillingston: Lancet, July 15, 1911. <sup>3</sup> Colebrooke: Lancet, July 15, 1911.

## PERSONAL OPINIONS.

# THE RÔLE OF HOSPITAL OUT-PATIENTS' DEPARTMENTS IN THE DETECTION OF TUBERCULOSIS.

BY CECIL WALL,

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The detection of pulmonary tuberculosis at an early stage is admitted to be essential for success in treatment. The further the disease has advanced before its discovery, the less is the likelihood of permanent arrest, and the longer will be the treatment required. Hitherto the out-patients' departments of the hospitals have waited until the patients have been driven by their symptoms to seek medical advice; and owing to the commonly insidious mode of onset of the disease, the delay has often proved disastrous.

Some change in the system for the discovery of tuberculous patients seems essential. There is but little doubt that the commonest mode of transmission of the disease is by personal contact. Consequently the systematic examination of the associates of tuberculous patients affords the best opportunity for its early discovery. The introduction of compulsory notification of tuberculous hospital outpatients has afforded an opportunity for the institution of some method to secure such systematic examination of contemporary associates, and may lead to the continued observation of those who have been submitted to infection in the past or are derived from a stock of low resisting power.

The tuberculosis dispensaries, where they have been established, endeavour to find the disease in its early stages by sending their medical officers to examine the other members of the household in which a case of pulmonary tuberculosis is known to exist.

An alternative method which seems to me to be more likely to suit the conditions obtaining in London is to make use of the services of the general practitioners in the examination of the associates of the tuberculous.

If the Insurance Bill becomes law, there will be very few households without a medical attendant, and these medical attendants will be in charge of the treatment of the tuberculous patients so long as they remain in their homes; they could be asked to examine the other members of the household, and should receive a special fee for the examination, seeing that the work would be an addition to their ordinary duties. They should have the power to refer any tuberculous patient, or any patient arousing their suspicion of tuberculosis, to a local consultative centre.

The local consultative centre should be well equipped with all the necessary aids to diagnosis, such as laboratories, observation wards, radiographic apparatus, etc., and should also have the power to set in motion the mechanism of treatment. This mechanism of treatment should be comprehensive, including sanatoria, hospital beds for cases requiring nursing, arrangements for the care of advanced cases and for the supervision of patients discharged from hospitals and sanatoria, assistance by home visiting, nursing, and the provision of extra rooms, shelters, extra beds, and the like. Moreover, the consultative centre should be able to recommend to the susceptible such prophylactic aids as convalescent homes, apprenticing and emigration committees, open-air schools, and so forth.

The London chest hospitals already possess much power to help their patients in these directions, but still require assistance for full development of their usefulness.

The general hospitals and some of the dispensaries are well equipped for the function of diagnosis, but are unable to supply directly the necessary treatment for their tuberculous patients. Their power to initiate treatment requires amplification.

In a comprehensive scheme for dealing with tuberculosis in London, the special hospitals, the general hospitals, and the dispensaries, could all act as consultative centres for certain areas; in some of the outlying districts it may be necessary to create new centres of a similar type.

The general practitioners of each area would work in connection with the consultative centre, carrying out the supervision of the patients in their homes and examining the associates; they would have the power to send any suspicious case to the consultative centre. Such a scheme would be comprehensive, efficient, and cheap.

It would be comprehensive, because it would secure the examination of the associates of all notified tuberculous patients, irrespective of their social status, by a doctor who is familiar with the medical history of the family and with the local conditions. Any scheme whereby a special officer visits the homes to examine the associates must be less comprehensive, because he cannot intervene between a patient and his doctor if one is already in attendance.

It would be efficient, because it supplies a consulting specialist to aid the general practitioner in diagnosis in cases of doubt, 304

and renders easy the inception of treatment if the presence of tuberculosis be established. Moreover, the general practitioner would have no hesitation in seeking a second opinion from a consultant of recognized standing, and, if working on a contract system, would have a strong inducement to transfer the onus of treatment to the shoulders of others.

It would be cheap, because it would utilize all the existing mechanisms, and the additional expense for the occasional examination of the associates of notified patients would be comparatively small. If special officers were appointed for this work in each area, the expense in salaries alone would be very great, and the establishment of new institutions would add much to the cost.

The present seems a most opportune time to develop the usefulness of the out-patient departments of the hospitals and dispensaries in London on the lines indicated, and to encourage their harmonious working in a consultative capacity with the general practitioners of their districts.

## DENTAL CONDITIONS IN TUBERCULOUS SUBJECTS.

By GEORGE THOMSON,

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The principal change which has taken place in our point de vue since Miller's "Micro-organisms of the Mouth" was published in 1890 concerns itself with the opinion that the tubercle bacillus is not inspired, but that it is ingested through the alimentary tract. Miller is still a long way in advance of many later writers, both as to the cause of dental caries and oral sepsis. "The soil, much more than the seed, controls the disease." Professor Adami says: "The tubercle bacillus, we may be fairly sure, from living, it may be, on foodstuffs outside the body, accustomed itself first to living on the surface and in the passage of the organism as a harmless saprophyte, and only later gained the power of living, not on, but in the tissues; and from that moment it became pathogenic."

Dr. Sim Wallace says: "The mouth is so exposed to bacterial infection that whenever it presents a suitable soil for the development of any common species to bacteria, then such bacteria will gain a foothold, and without such suitable soil it seems impossible for any

species of bacteria to have more than a transient existence in the mouth."

Dr. W. Hunter and Dr. Peter Daniels, with many others, have realized that oral sepsis produces a lowering of vital resistance, and further renders the patient an easy victim to pyæmic and suppurative processes. It is obvious that a mouth containing carious teeth and diseased gingival margins, with deposits and spaces between the teeth and pockets from which there is an exudation of pus, is a predisposing cause of many infective diseases. It would appear from the foregoing that the first rational method of prevention in the pre-tuberculosis stage would be the restoration of the mouth to health.

Again, it should be strongly urged that the permanent cure of pulmonary tuberculosis must be greatly hindered if the mouth is allowed to remain in an unhygienic condition. That general feeling of wellbeing which is always felt when the mouth is clean is especially important in the case of consumptives. The importance of proper nourishment to tuberculous patients, and the thorough mastication of food, so necessary to normal digestion, make it imperative that the teeth and gums should be restored to health.

Pawlow has demonstrated that normal digestion is dependent on the pleasurable chewing of food, with its accompaniment of a natural flow of saliva. It is not the amount of food nor its quality which nourishes the patient so much as the influences that preside over the nervous system affecting its digestion, and it is in the act of eating that the whole mechanism of digestion is set in motion. "An efficient stomach is the greatest asset of the consumptive," says Muthu.

The first 3 inches of the alimentary tract is under the control of the patient himself, and if the oral cavity is septic, how is it possible to expect the remainder can be healthy? It is the pollution of the stream at its source. Muthu states that more than 50 per cent. of the patients entering the sanatorium have carious teeth, and points to a close relation between dental caries and consumption. "Diseased conditions of the teeth and mouth not only act as a breeding-ground for micro-organisms, but bring about catarrhal inflammation of the tonsils and the pharynx, which, if persistent, injure their epithelium, weaken their defensive power, and very likely help the spread of infection."

Dr. Etienne Burnett, referring to the experiments of M. Vausteenburghe and M. Grysey, indicates that pulmonary anthracosis is not caused by the inhalation of dust, but by swallowing it, and is contracted by intestinal absorption. The dust reaches the lungs by passing through the wall of the alimentary tract. It seems from these

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experiments that weight is to be attached to the importance of well-developed jaws, in which the teeth properly occlude and the mouth is normally closed in the act of breathing, and specially during sleep, so that the air breathed is filtered through the nasal passages, thus offering resistance to the introduction of foreign bacilli.

The fundamental condition, then, in the prophylaxis of the disease is normal occlusion of the teeth, as opposed to the common abnormalities of occlusion, such as post-normal occlusion, better known as anterior protrusion of the incisors of the maxilla or open bite, in which the molars meet, but the incisors do not. These conditions are associated with high palate, adenoids, and mouth-breathing. These conditions must be referred to malnutrition, the sucking of milk from bottles, the use of the "comforter," or dummy teat, and there is no evidence at present that they are referable to prenatal conditions.

"In the matter of tuberculosis, prophylactic hygiene is more powerful than any therapeutics."

"By means of the natural resources of the organism, tuberculosis is already curable. This is not a paradox, but a fact. It is certain that experimental medicine will find the remedy, whether preventive or curable, that will act in the same way as Nature."

But it must also be remembered that while antitoxins render the subjects of diseases such as diphtheria and smallpox to some extent immune, it is not so with tuberculosis or cancer, because the victims of the latter are always more susceptible to the disease when once they have been affected, whether treated or otherwise. Therefore, the careful examination of children's teeth at the age of three, and treatment if necessary, as is being done systematically in Germany, and recently advocated at the Congress of the Sanitary Institute at Belfast, will probably be far-reaching in its effects, and prove to be one of the greatest advances made in preventive medicine and personal prophylaxis.

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## INSTITUTIONS FOR THE TUBERCULOUS.

## NORDRACH-ON-DEE SANATORIUM.

THE sanatorium of Nordrach-on-Dee, Banchory, situated on Deeside, near Balmoral, stands in the very heart of the Scottish Highlands. The selection of Deeside was something more than a merely fortuitous circumstance. So much importance was attached to securing an ideal site that the opinions of a number of the leading physicians in Scotland, including the then Professors of Medicine in the three Universities—namely, the late Sir Thomas Grainger Stewart, the late Sir William Gairdner, and Professor Finlay-were obtained before any definite district was decided upon. By unanimous consent they agreed with the finding of the Royal Commission, which sat under Sir James Clark in 1852, to decide upon the relative attractions of the various districts in Scotland from a hygienic point of view, which finding resulted in the acquisition of Balmoral Castle for her late Majesty, Queen Victoria. So the choice fell upon Middle Deeside. Its clear, pure air, fresh from the Grampian Mountains, and far removed from the contaminating influences of any great commercial centre, rich in ozone, opulent in its wealth of therapeutic vapours, matchless in its miles upon miles of dense pine forests, its dry and porous soil, with its hard brown sand, afford for this purpose a site which in the opinion of many cannot be surpassed in Britain.

Its value is further enhanced by the relatively warm climate which obtains in this district. Government figures show that the temperature of the atmosphere stands on an average during December and January several degrees higher than that of the South of England. They also show the presence of a percentage of sunshine (29'7) considerably higher than that of Kew.

In the erection of the sanatorium itself money was not regarded, and the fact that it cost over £670 per bed is sufficient indication of the lines upon which it has been built and equipped. Since first opened in 1900, owing to pressure for admission, it has been found necessary to extend it on three successive occasions. As it now stands, the sanatorium provides accommodation for seventy patients. It possesses a research laboratory, high-frequency and X-ray installations, and throat-room. The residency in the grounds near by accommodates the permanent staff of three resident physicians, matron masseuse, and eight fully-trained hospital nurses.

In regard to outdoor recreation and amusements, rather more liberal opportunities are provided than is the case in most sanatoria. Within the grounds there are three croquet lawns, one small bowling-green, rifle-ranges of 25 and 50 yards, a nine-hole putting course, and a nine-hole mashie course. The outdoor amusements are as strictly

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supervised and regulated as the hill-climbing and walking exercises. They are confined to the period between lunch and dinner. Not-withstanding the prejudice against incorporating games in a sanatorium régime, the senior physican is so convinced of their influence for good, when allowed in suitable cases, that as the result of experience,



THE NORDRACH-ON-DEE SANATORIUM.

he is disposed rather to extend than to restrict their use as a therapeutic measure.

One of the features which strikes visitors is the cosmopolitan nature of the patients. With the exception of Japan, Russia, and Greece, there is practically not a civilized country in the world which has not been or is not at present represented amongst the patients of this Scottish sanatorium.

DAVID LAWSON, M.D., F.R.S.E., Senior Resident Physician. Notrium for ence,

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## HEALTH STATIONS.

## DEESIDE.

It is a very popular belief that temperature in the British Isles diminishes in proportion to the distance northwards. Scientific observation seems to clearly demonstrate the contrary. Those who are in the habit of observing the relative readings of the thermometer may often be struck by the fact that in time of frost the readings in England are very frequently lower than those in the North-East of Scotland. It is a well-established fact, clearly proved by very carefully kept records extending over years, that mid-winter in North-East Scotland is milder and more equable than it is in the South-East of England. This peculiarity of temperature is largely accounted for by the proximity of the waters of the Atlantic, which may be conceived as a vast repository of heat, in which the warmth of the summer months, and probably of more southern regions also, is treasured up and reserved against the winter season. It has been estimated that in Shetland 36° over the normal temperature are added by the ocean. This amount tends to diminish as one travels southwards, Inverness receiving 31°, London 20°. The foregoing estimate applies to the months of November, December, January, and February.

The relative amount of sunshine is also a very important factor in respect to the healthfulness of a climate. It has been shown that on the average of the whole year, Aberdeen has a percentage of 30 of bright sunshine, as against 28 at Kew, and 26 at Greenwich.

Another very important consideration of climate is that of comparative dryness. Clouds carried by south-west winds from the Atlantic furnish the main supply of rain for Britain. Now, the southwest wind is the prevailing wind in the North-East of Scotland. How comes it, then, that the Deeside climate is dry? To the westward, at the head of Deeside, is the long chain of Grampian mountains, rising to over 4,000 feet, and this chain serves to deflect the south-west winds arriving on our coasts, driving them upwards into the colder regions of the atmosphere, where they become chilled and form into clouds, or deposit in rain the water which, from the lowering of the temperature, they can no longer hold in suspension. Thus the climate of the West of Scotland is wet as compared with the districts further east. Another effect of the dispersal of the clouds by the Grampians is that to the eastwards the sun is much less obscured. Thus Aberdeen has a percentage of 30 of bright sunshine as against Glasgow's 22. The rainfall of Middle and Lower Deeside is about 25 inches for the year.

With regard to the character of the atmosphere of Deeside, chemical analysis shows that the air contains a relatively high percentage of oxygen. Compared with the standard of 20'96 of oxygen, the air from Aberdeen is found to contain 21'95 per cent., Braemar

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21'18 per cent., and Benabhuird (at the foot of the Grampians) 29'8 per cent. An atmosphere thus enriched by oxygen reacts in favour of health in various ways. Amongst others it produces more complete oxidation, and thus increased bodily temperature, which acts as a defence against the depressing effects of cold from without.

The Dee Valley is narrow and the watershed steep, and as a consequence there is very little stagnant water or marsh-ground to throw obnoxious effluvia into the air and thereby waste the ozone. The subsoil is very porous, and consists principally of red gravel, which contains a large portion of alumina—a powerful deodorizer. The prevalence of this renders the soil specially absorbent, so that even after a heavy rainfall the surface becomes dry in a remarkably short time. It follows, of course, that the moisture speedily finds its way into the Dee, which is a rapid river, and is thus carried off at once with all its contained impurities. Deeside is a sparsely populated district, there being no large centres of population, and thus very little contamination takes place.

As a rule the trees of Deeside are of the pine family, rich in terebene, which, during sunshine, is given off in such quantity as to render the air in a measure aseptic, and when the pine needles fall, their decomposition gives rise to no obnoxious gases, but on the contrary, tends to destroy any such in their neighbourhood.

It will thus be seen, from the foregoing brief outline of the characters and of the climate of Deeside, that the locality is peculiarly adapted to the successful treatment of pulmonary tuberculosis.

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## NOTICES OF BOOKS.

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## ANTI-TUBERCULOSIS EFFORT IN GERMANY.

THE German Central Committee for the Combat against Tuberculosis held its fifteenth Annual General Meeting in Berlin on June 10, this year. The yearly Report of the Committee, just issued, has been drawn up by Professor Nietner, General Secretary, and is full of interest, information, and suggestion.1 In addition to a wealth of reading matter it contains many excellent illustrations. In this Report the German Committee year by year note what progress has been effected in all directions in the combat against tuberculosis. The results of experimental undertakings are commented upon, and their continuation encouraged or discouraged, as the case may be. Legislative measures are published and the different methods adopted by the various federal States are discussed. Weak spots are laid bare and the causes of standstill, or even retrogression, searched for in order that the next Report may have a different tale to tell. On the whole, the Committee has grounds for satisfaction with the results of its own efforts in the past year. Much work has been done, new experiments have turned out well, State recognition and co-operation have not been wanting, and in most departments progress has been The death-rate from tuberculosis is steadily, though maintained. slowly, decreasing, but still over 83,000 persons die annually from this disease. The death-rate for the Empire is now 159'2 per 100,000 from pulmonary tuberculosis, and 22.5 from other forms of tubercu-No compulsory notification of tuberculosis has been enforced throughout the Empire, a fact greatly deplored by Nietner. But in some of the States a modified notification is enforced. The high death- and damage-rate from tuberculosis among children is clearly The decrease in the death-rate from tuberculosis pointed out. among children does not keep step with the decreased adult deathrate from the same cause. This fact was most earnestly dealt with by Geheimer Ober-Medizinalrat Professor Kirchner, of the Ministerium des Innern, in his address to the general meeting on June 10, and his remarks, in common with those of other eminent speakers on the same occasion, merit attention. He stated that though the deathrate from tuberculosis was steadily decreasing, notably in Prussia, this decrease did not affect childhood, but that, on the contrary, for certain age-periods the death-rate had actually increased. This was peculiarly applicable to the age-period between ten and fifteen. In his opinion the only way to stop this evil was to hunt out the infective sources, to find the houses harbouring infective material, and to keep

<sup>1 &</sup>quot;Der Stand der Tuberkulose-Bekämpfung im Frühjahr, 1911." Geschäftsbericht für die XV. General-Versammlung des Zentral-Komitees, am 10. Juni, 1911, zu Berlin, Von Professor Dr. Nietner, General-Sekretär des Zentral-Komitees. i. 67, ii. 75. With twenty-nine illustrations and two plans. Berlin, W., 9: Königin Augusta Strasse, 11. 1911.

the children and the sources of infection apart. With regard to the houses, deficiencies of construction were of less danger than uncleanliness and carelessness with regard to infective discharges. An absolutely necessary condition to success lay in the removal of persons with "open" tuberculosis to places where they were not a source of constant danger to those who came into contact with them. How this could be effected was a crucial question. The increased building of hospitals had been advocated. The building and equipment of hospitals and sanatoria had nowadays reached a stage of development that was in one sense highly admirable, but that was by no means without serious drawbacks. Magnificent hospitals were constantly springing up which cost millions of marks to build, and in which each bed represented £500 to £750 or more. This naturally demanded colossal capital, and the upkeep of such establishments was a very costly affair. But the ideal was far removed from these. The local communes must occupy themselves with the question whether they themselves could not erect their own hospitals, large enough to meet local necessities and perfectly competent to do what was required of them, yet built and equipped with such economy as not to throw too great a burden on the local resources. While warmly advocating housedisinfection and house-cleaning, the provision of bathing facilities, and the training of children in the habits of cleanliness and in the care of their teeth, it was necessary to emphasize the classic sentence of Robert Koch's, that "the source of tuberculosis is the tuberculous subject, and if we wish successfully to wage war against tuberculosis it is the tuberculous subject that must first occupy our attention." Another speaker, Professor Jacob, of Berlin, gave the results of a recent examination of children in rural districts, and stated that of 6,300 children examined, no less than 5,700 were found to have enlarged lymphatic glands; 2,700 were tested with von Pirquet's cuti-reaction, with the result that 45 per cent. in some villages, and 70 per cent. in some others gave a positive reaction. Professor Jacob declared that the lack of cleanliness in some rural districts was almost incredible! In a long series of villages he found many children of ages ranging from ten to fifteen who, during the whole course of their lives, had only once or twice had soap and water applied to other parts of the body than face and hands. School baths were therefore as urgently required in the rural districts as in the towns. But the most dangerous factor was the personal association of young children with adult consumptives. To keep them apart in village homes offered great difficulties. In one country district with 146 consumptive subjects, 100 of these shared their meagre sleeping accommodation with one, two, three, and even four other persons, including children. He thought that the cost of erecting isolation hospitals would fall too heavily on rural parishes, and that a more practicable course would be to allow such rural communities to hire a sufficient number of special movable huts. Professor von Pirquet gave a most interesting address on the tuberculosis of infancy and childhood. He compared tuberculosis to syphilis in showing a distinct primary, secondary, and tertiary stage. The primary stage developed in a few weeks in the lung, in by far the greatest number of cases, as the result of inhaled infective material. Primary foci in the skin or in the intestinal tract were rare, the bacillus of bovine tuberculosis and infection due to the ingestion

of cow's milk playing quite a subordinate part in transmission. The bacilli which had gained a footing in the lung multiplied in their favourable environment and eventually wandered into adjacent glands. In a short time the primary pulmonary stage might be converted into the secondary stage, the blood-stream carrying the infection to other tissues and organs-bones and joints, skin, mucous membrane, etc. In the case of young children the meninges were peculiarly susceptible to infection, and death frequently ensued from meningitis. The children who die at this early stage are of less interest to the hygienist than those who survive the infective processes. These could be divided into two groups—the scrofulous children with chronic secondary manifestations, and those displaying no definite secondary symptoms at all. As a matter of fact, as often the case in syphilis, the disease could begin and end with the development of a minute focus of infection resulting in a temporary swelling of the lymphatic glands. Also, on the other hand, the infection could be harboured in the gland in a latent form for many years, and then break out in the tertiary stage as phthisis or other active tubercular manifestation. It was von Behring who first regarded pulmonary tuberculosis as the tertiary stage of infection. But he held the intestine to be the original infected focus, whereas we uphold the inhalation theory of infection. It remains an unsolved problem why the tertiary stage occasionally only develops in the course of years. But after researches in connection with measles and tuberculosis, Professor von Pirquet had come to the conclusion that the human organism is exposed to "anergic periods" which give the bacillus an opportunity to leave its lurking-place and to develop and multiply. This anergic period is marked by a diminution of antibodies and a lack of resistance. Now in measles there is no tuberculin reaction, and frequently tuberculosis rapidly develops at the same time. Therefore the failure to react is an index to the failure to resist. Such anergic periods may also be associated with periods of physical or physiological strain or of poor nutrition. Infection during the first year of life is almost certainly lethal, and must be prevented by all means in our power. With regard to infection at a later stage of childhood, were we to dread this equally and try to prevent it, or were we to regard it as a mode of immunization? Here we were still working in the dark, for no statistics were available that could tell us to what extent the tertiary stage of tuberculosis was influenced by the date of the primary infection; we did not know whether persons who became primarily infected as adults were worse off or better off than those who had already checkmated the tubercle bacillus in early childhood. One thing was certain. In households harbouring a consumptive member children should have no place; or, to put it the other way round, where there are children, no consumptive person should be allowed to remain. To effect a radical separation between the two should be the object of ceaseless endeavour on the part of the communal and social authorities, but the measures that were to be advocated in order to attain this object would be largely a matter for local conditions and requirements and for local resources to decide.

Sanatoria and the results of sanatorium treatment form a prominent feature in the Yearly Report. The accommodation for advanced

"open" tuberculous cases has greatly increased during the last year. There are 144 special homes or special wards for these cases. But they find little favour with the patients themselves who naturally prefer to remain in their own homes. There are now altogether 136 sanatoria, with a total of 14,186 beds. For children with manifest tuberculosis there are 22 Heilstätte, with 1,000 beds; while for scrofulous children 86 Heilstätten, containing 8,122 beds, are provided. There are 99 Walderholungsstätten (Forest Camps). A new departure has been made by copying the American system of "Night Camps." These are for day-workers. The night camps secure them a night's lodging in good air, with good supper and breakfast, and also bathing facilities. Some of the forest camps are utilized day and night by two different sets of visitors. There are only a few night camps as yet, but the results are so encouraging that their numbers will certainly increase. The number of Waldschulen (Forest Schools) has increased to fifteen. The sanatoria claim that they have better permanent results from year to year, and that the number of patients who are discharged with a restored wage-earning capacity is increasing. Careful observations have been taken for periods extending over five years and more, but such statistics as are available, though admirably drawn up, suffer from a lack of detail regarding the nature of the occupation prior to entering the sanatorium, the occupation adopted after discharge, and other points of interest. Undoubtedly, the new institution of Beobachtungs-Stationem (Observation Stations) is doing valuable work in the selection and rejection of applicants for sanatorium treatment. There are now thirty-four of these observation stations, and their number will probably increase. Some of these also undertake post-sanatorium supervision and treatment by tuberculin. Tuberculin treatment is markedly gaining in favour, both as routine treatment in the sanatoria and as aftertreatment, and several of the great invalidity insurance institutions have taken it up. But by far the most marked increase has been recorded with regard to the Auskunft und Fürsorge-Stellen (dispensaries). There are 200 more this year than last, there being now 1,062 in all, not counting twenty Polyclinics which combine treatment with the ordinary dispensary service. The dispensary has become recognized in Germany as the centre of anti-tuberculosis activity, and with the typical national trend towards centralization and co-ordination, strenuous efforts are now being made towards the unification of the dispensary service throughout the Empire. The Executive Council of the Central Committee for the Combat against Tuberculosis have appointed a special commission for the further extension of the dispensary movement, and have elected Professor Gaffky, of Berlin, to act as president. General meetings will be held yearly. It is among the objects of the Commission to collect information from all sources, to promote the association and co-operation of all the dispensaries with each other and with all kindred welfare institutions, and to establish a homogenized model as a basis for reports and Various questions will be studied, among others the question of who should bear the cost of establishing and supporting dispensaries, the relation of the invalidity insurance institution to the dispensary, of the medical profession to the dispensary, and of the dispensary to all other social organizations, both of a public and of a

private nature. Finally, attention will be devoted to the very important matter of the scientific use that is to be made of the ample statistical material that it is within the scope of every tuberculosis dispensary to collect. The first meeting was held on May 4 this year. It was reported that the invalidity insurance institutions were giving substantial help to the dispensaries, recognizing in them a reliable machinery for lightening their own financial obligations. In some districts the Krankenkassen (local sick insurance societies) have not been behindhand, and have paid grants to the dispensaries at the rate of 2 to 5 pfennigs per insured member per year. In a large country like Germany, presenting such an infinite diversity of local conditions, any attempt to set up a hard-and-fast working model for a unified dispensary service would be doomed to failure from the outset. Each locality should have the service best adapted to its needs, its resources, and its social ideals. But the central dispensary would be there to give valuable help in setting the new dispensary on its feet, to assist it with initiated advice, and to receive its statistics and reports. The Gemeinden (local authorities) are now displaying a laudable activity in instituting prophylactic measures against tuberculosis, chiefly in the preventive treatment of children, and in the isolation of advanced cases. The invalidity insurance institutions are renowned for their preventive policy, but children hardly come within the scope of the industrial insurance benefits, except indirectly. In conclusion, it is interesting to note an energetic course of action recently adopted by Charlottenburg, a town ever in the van of social betterment schemes. On March I, this year, it inaugurated a new municipal department called the Wohnungsamt (Bureau of Housing). The work is carried out by a "deputation" consisting of twenty-four members, of whom five are municipal councillors, sixteen are citizens, and three are women. The sixteen citizen members and the three women are elected for a term of six years and three years respectively. Very exact and precise regulations have been drawn up for their guidance, and they are vested with a considerable degree of authority. The work is subdivided as follows: I. Wohnungspflege.—This department concerns itself with domiciliary inquiry and supervision. Its area of activity includes (a) all dwellings consisting of less than three rooms, not including a kitchen; (b) all dwellings offering accommodation to night-lodgers (Schlaf-gänger); and (c) all sleeping-quarters occupied by persons "living in," including workmen, apprentices, shop-assistants and domestic servants. 2. Wohnungs-Nachweis.—This is a housing exchange which acts as a free agency for the class of dwellings specified above. 3. Wohnungs-Statistik.—In this department hygienic and sanitary data in connection with the above class of dwellings are recorded on cards and sheets for purposes of reference. 4. Wohnungs-Fürsorge.—This department offers unlimited scope for future civic activity as its object is to promote the better provision of suitable dwellings for the lowest grade of rents. EMILIA V. KANTHACK DE VOSS.

## THE AUTO-INOCULATION OF THE CONSUMPTIVE.

Dr. Marcus Paterson, by his originality, independence, and enterprise in scientifically systematizing the graduation of rest and labour in the restoration of consumptives at the Frimley Sanatorium of the

Brompton Hospital, has not only won honourable distinction for himself, but has provided medical science with directing data regarding therapeutic procedures of the greatest importance and value. recently issued large and imposing volume, handsome in form and beautifully illustrated, Dr. Paterson clearly and emphatically sets forth, with characteristic directness and a freshness and originality which is peculiarly refreshing, his views regarding the application of the theory of auto-inoculation in the treatment of pulmonary tuberculosis. Space will not permit of anything like a lengthy notice here, but it should be said at once that the work is one which every medical superintendent of a sanatorium, dispensary, or hospital for tuberculous patients, should possess and study carefully. The work is essentially clinical, and every page bears witness to the practical and common-sense attitude adopted by the author. Dr. Paterson regards pulmonary tuberculosis as similar to all other infectious or bacterial diseases, in that it manifests itself in two ways-first by physical signs, due to local pathological changes in the lungs; and, secondly, by changes in the general health of the patient, due to absorption of bacterial products, produced at the primary focus, into the systemic circulation. He shows that "hitherto the general attitude of the medical profession to tuberculosis has been that rest and fresh air are the beginning and end of treatment." We agree with him that "the term 'arrest' is meaningless if it does not imply in the subject capacity to undergo the exertions and fatigues of ordinary life without risk of suffering from fever and constitutional disturbance. The methods employed at Frimley are described in detail, and the results as here recorded are certainly excellent. Dr. Paterson is an enthusiast, but his enthusiasm is justified by his experience; and although we do not endorse all the views expressed, or approve all the practices here recommended, yet we have no hesitation in saying that Dr. Paterson, by his practical methods, based on the working hypothesis of auto-inoculation, has not only widened our outlook, but has provided us with diagnostic and therapeutic agencies of the greatest service. Before the next edition of this work is called for, we trust that the author will have extended his observations so as to enable him to give definite information regarding the benefit of artificial inoculation. As far as we can gather, chief reliance has been placed on the influence of natural immunization from auto-inoculation, for there is but little reference to the use of tuberculin. The work, however, is a notable one. Special praise must be reserved for the admirable series of illustrations of the graduated work carried on by the patients at Frimley.

#### VACCINE THERAPY.

Dr. Carmalt Jones has provided a work which will be invaluable to practitioners desirous of possessing in a convenient and concise form particulars of the principles and practice of vaccine therapy.<sup>2</sup> In

<sup>1 &</sup>quot;Auto-inoculation in Pulmonary Tuberculosis." By Marcus Paterson, M.B., B.S., M.R.C.S., L.R.C.P., Medical Superintendent at Brompton Hospital Sanatorium, Frimley. London: James Nisbet and Co., Ltd., 22, Berners Street, W. Pp. 242. With appendices, plates, charts, and illustrations. 1911. Price 21s, net. 2 "An Introduction to Therapeutic Inoculation." By D. W. Carmalt Jones, M.A., M.D., M.R.C.P., Assistant Physician and Director of the Department of Bacterio-Therapeutics, Westminster Hospital. Pp. xiii+171. With 4 plates and frontispiece in colours. London: Macmillan and Co., Ltd. 1911. Price 3s. 6d. net,

simple, direct, and easily-understood language the problems of bacterial infection and immunity, and the history of the evolution of therapeutic inoculations, are presented. The principles of bacteriological diagnosis and the preparation and uses of vaccines are lucidly explained. A chapter is also devoted to a consideration of the results of the treatment of bacterial disease by vaccines. But the most serviceable portion of the volume is that devoted to an exposition of the practice of therapeutic inoculation. Here are given details regarding the treatment of various microbial affections, with data of cases concerning which the author has been able to procure first-hand information. Most of the patients have been under observation in the Out-patient Department of Therapeutic Inoculation at St. Mary's Hospital, and due acknowledgment is made of the encouragement of Sir Almroth Wright, the Director, in the preparation of this book. The technique described is substantially that employed in the laboratory at St. Mary's Hospital. appendix full particulars are given for the carrying out of the estimation of the opsonic index. The illustrations provided on the large folding-plates will prove of considerable service to the practical worker. Tuberculous affections, of course, receive consideration. We trust, however, that in the next edition the author will see fit to devote a special chapter to the vaccine-therapy of tuberculosis, a subject likely to be of increasing interest and importance. Dr. Carmalt Jones has been well advised in publishing so compact and informing an "introduction" to what is a new department of medical science, and one which, although only in its beginnings, is full of promise for rational therapeutics.

## A POPULAR EXPOSITION OF TUBERCULOSIS.

Professor Knopf's International Prize Essay is so well known as to need no recommendation. We are glad, however, to welcome a new edition of this popular brochure.\(^1\) It has now been issued in American, Arabic, Bohemian, Brazilian, Bulgarian, Chinese, Dutch, Finnish, French, German, Hebrew, Hindu, Hungarian, Icelandic, Italian, Japanese, Mexican, Norwegian, Polish, Russian, Servian, Spanish, Swedish, and Turkish editions. There is also an English edition printed in America. The work is worthy of the reception it has received. It has been an influential weapon in the world-wide conflict with tuberculosis. We could wish that means could be found whereby it might be distributed broadcast throughout this country.

## BUILDINGS FOR CONSUMPTIVES.

Dr. Carrington, the Assistant-Secretary of the National Association for the Study and Prevention of Tuberculosis in the United States of America, has made a special study of hospital and sanatoria construction viewed from the tuberculosis standpoint. By the publication of his liberally illustrated and beautifully printed monograph he has laid

1 "Tuberculosis as a Disease of the Masses, and How to Combat it." Prize Essay. By S. Adolphus Knopf, M.D., Professor of Phthisio-Therapy at the New York Post-Graduate Medical School and Hospital. Seventh American edition, enlarged and revised. Pp. 124. With 64 illustrations. New York: Office of The Survey, 105, East Twenty-second Street. 1911. Price 25 cents, paper covers; 50 cents, bound in cloth.

all practical students of the tuberculosis question under a deep debt of gratitude. The work is particularly timely; and in this country, where much discussion is progressing regarding the rôle of the sanatorium, it should be in the hands of every medical officer of health and borough or county architect. The present volume is an expansion of the pamphlet prepared some two years since by Dr. Carrington in response to a pressing demand for information and advice in the establishment of institutions for consumptives. It contains an immense amount of information regarding sites and grouping of buildings, the planning of administrative quarters, and the construction of sanatoria and hospitals of many and varied types. Not only are photographic reproductions given of a considerable number of institutions now at work, but plans and data regarding accommodation and cost. This is one of the most practical and serviceable of books yet published on the all-important problem of providing for the consumptive. Although written from the American point of view, it will be of much value to us in this country, and particularly to workers in our Dominions over Sea.

## MANUALS FOR MEDICAL PRACTITIONERS AND WORKS OF REFERENCE.

In previous numbers we have drawn attention to the valuable "Encyclopædia of Medicine and Surgery," edited with much discernment and industry by Dr. J. W. Ballantyne, and issued in many volumes by the enterprise of Messrs. William Green and Sons. Such a comprehensive work inevitably and speedily becomes, at least in part, out of date; but with this great work the Editor has provided for this cruel infliction of time on talents, and has issued a supplemental volume dealing with the advances made from 1906 to 1910.2 Among the 1,252 articles appearing in this volume, those likely to be of special interest to our readers include contributions on ante-natal pathology, Bier's method of treatment by hyperæmia, eugenics, heredity, immunity, the surgery of the lungs and thorax, lupus vulgaris, natality and depopulation, Roentgen rays and radium, sero-therapy, and tuberculosis. In the last a fair account is given of tuberculin treatment. There is a good index. We wish it had been possible to arrange for the articles to be signed. Dr. Ballantyne has achieved a notable success, and is to be heartily congratulated on the completion of his great undertaking.

Mr. H. E. Waller has written a stimulating monograph on "Thyroid Therapy," which medical superintendents of sanatoria would be well advised to study.<sup>3</sup> There is no doubt but that many cases of con.

<sup>2</sup> "Quinquennium of Medicine and Surgery, 1906 to 1910." Edited by J. W. Ballantyne, M.D., F.R.C.P.E. Pp. 411. Edinburgh: William Green and Sons, 2 and 4, St. Giles Street. 1911. Price 10s. 6d. net.

<sup>3</sup> "Theory and Practice of Thyroid Therapy." Being some Experiences of the

3" Theory and Practice of Thyroid Therapy." Being some Experiences of the Results of Thyroid Medication, with Deductions concerning the Influence of Thyroid Secretion in Health and Disease, and Certain Effects of Drugs and Various Circumstances upon Thyroid Secretion. Pp. xii+154. London: John Bale, Sons, and Danielsson, Ltd., 83-91, Great Titchfield Street, Oxford Street, W.

<sup>1 &</sup>quot;Tuberculosis Hospital and Sanatorium Construction," Written for the National Association for the Study and Prevention of Tuberculosis. By Thomas Spees Carrington, M.D., Assistant Secretary. Pp. 168. With numerous illustrations and plans. New York: National Association for the Study and Prevention of Tuberculosis, 105, East Twenty-second Street. 1911. Price 25 cents.

2 "Quinquennium of Medicine and Surgery, 1906 to 1910." Edited by J. W.

sumption are also suffering from malnutrition dependent on thyroid insufficiency. The relation of tuberculosis to thyroidal inadequacy is a subject which requires investigation. Mr. Waller in his book has collected facts, presented hypotheses, and described cases dealing with causes, symptoms, and results of thyroid insufficiency. The sections on thyroid as an ingredient of mother's milk, fat and thyroid activity, and goitrous conditions, are full of suggestive considerations. There is much sound advice respecting treatment. The work is one which the family practitioner should not overlook.

For not a few forms of tuberculous disease affecting the spine, bones, and joints, the judicious use of plaster-of-Paris appliances provides one of the best means whereby immobility and rest can be obtained. A particularly practical little work on the employment of this agent has been prepared by Dr. Martin W. Ware.\(^1\) It is based on long experience, and will be invaluable to resident officers in children's hospitals and sanatoria. The work throughout is eminently practical, and the illustrations are numerous and well selected. We think the author would be wise to undertake the preparation of a special volume devoted solely to the use of plaster-of-Paris in cases of so-called

surgical tuberculosis.

Dr. Rolleston's modest brochure on the preparation of theses will be welcomed by many aspirants to medicine degrees.<sup>2</sup> The little volume is a collection of articles which appeared in St. George's Hospital Gazette, and has been issued at the suggestion of Sir Clifford Allbutt, the Regius Professor of Medicine at Cambridge. Needless to say, the

booklet is full of information and suggestions pleasingly presented.

Messrs. Burroughs Wellcome and Co., with their usual forethought and enterprise, prepared a peculiarly attractive and beautifully illustrated little work for presentation at the recent meeting of the British Medical Association at Birmingham.<sup>3</sup> It dealt with the history of the clinical examination of urine, and most of the illustrations are reproduced from old prints and pictures.

Among the numerous travel guides published during the past season, Mr. S. Leguet's book on Belgium<sup>4</sup> should not be overlooked. It is a reliable guide intended for English visitors, and it will be of particular interest and value to medical practitioners, as it affords detailed information regarding the readily accessible health and holiday resorts of Belgium.

<sup>1 &</sup>quot;Plaster-of-Paris and How to Use It." By Martin W. Ware, M.D., Surgeon to the Good Samaritan Dispensary, etc. Second edition, revised and enlarged. Pp. viii+99. With 90 illustrations. New York: Surgery Publishing Company, 92. William Street.

<sup>92,</sup> William Street. 1911.

2 "On Writing Theses for M.B. and M.D. Degrees." By H. D. Rolleston, M.D., F.R.C.P., Senior Physician St. George's Hospital. Pp. 27. London: John Bale, Sons, and Danielsson, Ltd. 1911. Price 18.

Bale, Sons, and Danielsson, Ltd. 1911. Price 18.

"The Evolution of Urine Analysis: An Historical Sketch of the Clinical Examination of Urine." Pp. 92. London: Burroughs Wellcome and Co. 1911.

"Belgium Illustrated: The English Visitors' Guide." By S. Leguet. Pp. 171. With itineraries, maps, illustrations, and an illustrated art supplement of the masterpieces of Belgium's famous painters. Croydon, Surrey: The Darley Tourist Guides, Mechlin, Lower Addiscombe Road. 1911. Price 18. net.

## PREPARATIONS AND APPLIANCES.

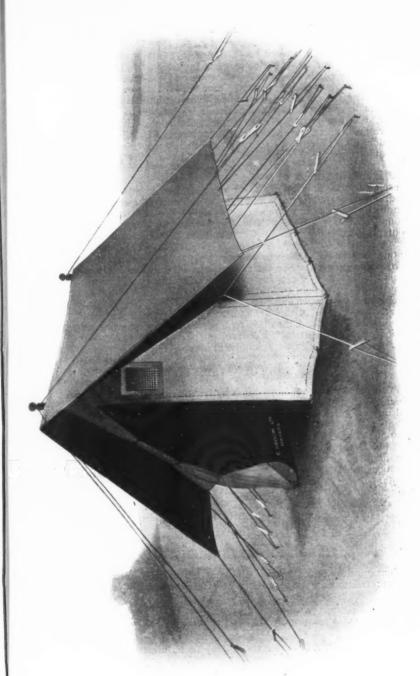
## CELLULAR CLOTHING.

At the beginning of the winter season it is well that both physicians and patients should give heed to the selection and supervision of hygienic clothing, and particularly of underwear. Many consumptives are very susceptible to cold, and are readily depressed and rendered miserable by damp weather and exposure to inclement conditions. In ordering open-air methods of life, patients should always be warned to provide themselves with suitable garments. In too many sanatoria the question of clothing is neglected or inadequately dealt with. We have recently experimented with AERTEX CELLULAR CLOTHING, and are convinced of its many advantages for tuberculous and tuberculouslydisposed cases. It provides just the sort of underwear which these subjects require. The cellular texture of the fabric permits of the free action of the skin and the ready escape of perspiration. At the same time the warmth of the body is retained by the influence of the non-conducting air contained in the meshes. These garments are cool in summer and yet warm in winter, and, as we have proved, provide an ideal all-the-year-round underwear. Moreover, they are of excellent design and workmanship, particularly comfortable, and cause no irritation even to the most sensitive skin; they are easily washed, do not shrink, and are thoroughly durable. Aertex garments are made for men, women, and children in all sizes and many forms. Attention may also here be directed to the AERTEX CELLULAR SHEETS, which might be used with great advantage in many sanatoria. As is now well known, open-air methods afford the best means for overcoming night-sweats and lowering temperature in tuberculous cases. believe that these cellular bed-sheets will be valuable adjuncts in dealing with this class of case. They are certainly lighter, warmer, and more comfortable than ordinary sheets, and do not give rise to the irritation, oppression, and sense of overloading which come from sleeping between blankets. For children they will be particularly valuable. Medical men generally will do well to pay greater attention to this important matter of the hygienic clothing of their tuberculous patients.

#### A SANATORIUM TENT.

Much ingenuity is being displayed in the construction of shelters, tents, and similar contrivances for patients undergoing open-air treatment. Many of these devices provide effective and economic means for the conduct of hygienic management of tuberculous cases in accordance with sanatorium principles. The establishment of elaborate buildings is a costly proceeding, and their upkeep necessi-

<sup>&</sup>lt;sup>1</sup> Full particulars regarding the Aertex Cellular Clothing and Cellular Sheets may be obtained on application to the Cellular Clothing Company, Ltd., 72 and 73, Fore Street, London, E.C.



THE "SANA" TENT.

tates extensive outlay. For not a few cases treatment under simpler conditions and at a cost which is comparatively trifling is now available. It is well that both the profession and the public should be aware of the ways and means by which an open-air life may be secured with the maximum of benefit and the minimum of expense. Among the new devices, special attention should be directed to THE "SANA" TENT, recently introduced by Messrs. C. Groom, Ltd., the wellknown firm of tent and marquee manufacturers of Leadenhall House, London, E.C. This tent has been designed for open-air treatment. It is thoroughly well ventilated by a double roof with an air space of 8 inches between, and there are ventilating windows at each end, made with flaps to roll up, thus allowing a good current of fresh air to pass through the whole tent. A door is provided at each end, and the walls can be tied up or let down as required. It is made of green cotton canvas, waterproofed. The height of the ridge from ground is 7 feet, and the walls are 3 feet high, while the outer roof projects 12 inches from both ends of the tent, and 15 inches beyond the walls. We have carefully tested this tent, and can give it unqualified praise. It will be of much value in treating cases in their own home grounds. For the continuance of a hygienic method of life after discharge from a sanatorium it offers many advantages. In the case of tuberculous and tuberculously disposed children it may be strongly recommended. A "Sana" tent may be seen in service at the sanatorium of the National Children's Home at Harpenden. It should also be added that this tent presents many advantages for ordinary healthy adults and children, and for use in gardens, at the seaside, or during holidays, it will be of much service.

## SPUTUM FLASKS.

Tuberculous sputum is probably by far the most important agency whereby tuberculosis is spread. Adequate provision for the collection and disposal of the expectoration of consumptives is one of the most essential of anti-tuberculosis measures. Among the many forms of sputum flasks which have been invented, the original patterns introduced by Dettweiler still hold their position among the chief favourites. Messrs. J. C. Gugenheimer and Co., Ltd., have recently drawn our attention to the Pocket Spitting Flasks for which they are the agents. These receptacles are of blue glass, fitted with nickel-plated spring lids or white metal screw caps. They are well adapted for the pocket, are easily cleaned, can be readily concealed in a suitable hand-kerchief or flask-cover, and are durable. Superintendents of sanatoria will be wise to procure particulars of these flasks.

## HYGIENIC HANDKERCHIEFS.

Consumptive patients will find the "Toinoco" Silky-Fibre. Aseptic Handkerchief a great boon.<sup>2</sup> They are highly satisfactory

application,

The "Toinoco" Silky-Fibre Aseptic Handkerchiefs may be obtained from the proprietors, Messrs. J. T. Powell and Co., 3, Unity Street, Bristol.

<sup>&</sup>lt;sup>1</sup> Messrs. J. C. Gugenheimer and Co., Ltd., Spencer House, South Place, Finsbury, London, E.C., supply these flasks to sanatoria and hospitals at prices ranging from 5s. to 25s. per dozen. An illustrated price-list will be sent on application.

both from the hygienic and æsthetic standpoints. They are of suitable size, soft, strong, pleasant to use, and inexpensive. They can be obtained medicated if desired. For many cases with infectious discharges from the nose, throat, or lungs, these handkerchiefs will be invaluable. Children in schools should be encouraged to use them, and travellers will find them a great convenience.

## A SANATORIUM REQUISITE.

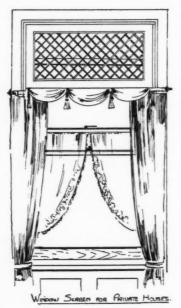
Among the necessities of sanatorium life, and a requisite for all who, as gardeners, florists, and the like, lead the open-air life, is some convenient form of tying material. Our attention has recently been drawn to Tube Greentwist, of which many of our readers will be glad to know.¹ It consists of soft, pliable, strong, fine green tying material, contained in a stout waterproofed tube, which can be readily carried in the pocket. For the tying of plants and flowers, and for use in the garden and greenhouse, this novel provision only needs to be known to be thoroughly appreciated.

## THE CARE OF THE FEET.

Every experienced medical superintendent of a sanatorium for consumptives is well aware of the necessity for taking thought regarding the care of the feet of his patients. In the hygienic management of tuberculous cases regulated exercise and graduated labour provide valuable restorative agencies; but the subjects of flat-foot and other deformities of the feet are seriously handicapped, and sometimes quite incapacitated, for living the open-air life in its fulness. Medical advisers, when advising an out-door existence, are only too apt to overlook this important matter. Every case undergoing sanatorium treatment should have the feet thoroughly examined. Oftentimes some comparatively simple contrivance will do much to remove, or at least alleviate the disability. Our attention has recently been drawn to the ingenious and effective appliances introduced by Mr. H. J. Pond. The IDEAL SUPPORT FOR WEAK FEET is a neat, light, strong, leather-covered support, which is so moulded that it fits comfortably under the arch of the instep. It can be worn with any boot or shoe, and affords such strengthening to the foot that the aching and other distressing symptoms which accompany flat-foot are speedily removed. Cases predisposed to flat-foot should be advised to wear these supports as a prophylactic measure. For other cases the flexible ARCH SOCKS may be recommended. They occupy the whole length of the bottom of the boot, and so, without any elastic fastening, give the support needed. Mr. Pond has also introduced some excellent Toe-Springs for dealing with cases of They provide a spring splint for the one side of the greattoe, which is encircled by a wash-leather-covered metal loop attached to the splint. Various forms of "Perfectoe Pads" are available. We strongly commend these helpful contrivances to the notice of our

1 "Tube Greentwist" is manufactured by Messrs, Robertson, Ireland and Co., Dundee, from whom all particulars may be obtained.

<sup>2</sup> Full particulars regarding Pond's supports and toe-splints may be obtained on application to the maker, Mr. H. J. Pond, Boot and Shoe Manufacturer, Castle Meadow, Norwich.



PASSED BY THE INCORPORATED SOCIETY OF HYGIENS

## A WINDOW SCREEN.

Many devices have been introduced with a view to provide for the entrance of pure air through the window and at the same time to secure the arrest of dust, insects, and all elements likely to prove irritants. The most recent invention is that of Mrs. H. W. Morris, of 24, Minard Road, Catford. The chief features of this new Window Screen are indicated in the accompanying figure. screen consists of a frame, fitting into the casement, within which are mounted two panels of a reticulated material, and between these is a sheet of muslin. The muslin can be easily renewed and If cleansed. desired. some form of antiseptic gauze can be employed.

The invention is certainly ingenious, and its simplicity and effectiveness should commend it to both physicians and patients.1

## AN ALUMINIUM HOT-WATER BOTTLE.

With the approach of autumn it becomes necessary to investigate our provision for protecting patients and delicate persons from the depressing influence of cold. In many sanatoria too little attention is given to this important matter, and cases not only suffer discomforts, but have their recovery deferred, by the debilitating action of damp and cold. For a large number of cases, some means whereby the bed and resting-couch can be warmed must be found. A new form of Hot-Water Bottle has recently been introduced by Mr. J. S. Neil, the House Governor of the Wolverhampton and Staffordshire General Hospital.2 It is made of "drawn" aluminium, and is bottle-shaped. On one side it is flattened, so preventing rolling. Such a heater possesses evident advantages: it is light, strong, does not rust, is

Co., Wolverhampton.

<sup>&</sup>lt;sup>1</sup> Full particulars regarding the above window screen may be obtained on application to Mrs. H. W. Morris, 24, Minard Road, Catford, or the maker, F. W. Loasby, 276, Hither Green Lane, London, S.E.

<sup>2</sup> The aluminium hot-water bottle is manufactured by Messrs. Jones Bros. and

easily cleaned, and is not readily broken. When in use it should have a flannel covering. This new water-bottle should be popular in hospitals and sanatoria, as well as be approved by private patients undergoing home treatment.

## THE PLAGUE OF FLIES.

It cannot be denied that open-air treatment has serious difficulties and drawbacks. Not the least of these is the perplexities and disorders arising from the prevalence of mosquito and other man-invading insects. A serviceable preparation for preventing the invasion of patients by these pests is Ambrecht's Mosquito and Insect Pyrethrum Eau de COLOGNE. 1 It is made from pyrethrum flowers, and is supplied in convenient forms for use. For patients and travellers a Pyrethrum Carrier is provided, consisting of a little vulcanite tube, the top of which is fitted with a sponge, which is easily saturated with the protecting preparation. This contrivance can be carried in the waistcoat-pocket, and so provides a means whereby the irritation arising from the stings and bites of insects can be relieved. Other preparations are available for sprinkling over garments. We advise sanatorium patients, sportsmen, and tourists to acquaint themselves with the merits of the " Pyrethrum Insect and Mosquito Outfit."

## "FORMAROSE" TABLETS.

Messrs. Arthur H. Cox and Co., Ltd., have favoured us with specimens of their "FORMAROSE" TABLETS, which provide a pleasing and satisfactory form of antiseptic and demulcent preparation for catarrhal conditions of the throat. They are composed of formathol, citric acid, milk-sugar, starch, and sugar, with concentrated infusion of roses. Many consumptives are much troubled by symptoms dependent on chronic inflammatory conditions of the mucous membrane of the pharynx, and for such "formarose" will be found of considerable benefit.2

#### LYSOFORM.

Lysoform is an effective disinfectant and antiseptic peculiarly suited for use in a sanatorium for tuberculous subjects. It is non-poisonous, non-corrosive, possesses an agreeable odour, does not stain linen or other fabrics, and yet possesses powerful germicidal properties; moreover, it is a reliable deodorant. A variety of sanitary and hygienic preparations, in which "Lysoform" is the chief ingredient, may now be obtained.8

Messrs, Ambrecht, Nelson, and Co., 71 and 73, Duke Street, Grosvenor Square, London, W., publish an informing booklet on "Mosquitoes, and other Flying and Creeping Pests producing Sickness in Man and Beast," which gives full

particulars of the above-mentioned preparations.

<sup>2</sup> Particulars respecting "Formarose" may be obtained on application to Messrs. Arthur H. Cox and Co., Ltd., The Laboratory, Brighton.

<sup>3</sup> Full particulars of Lysoform and Lysoform preparations may be obtained on application to the British Lysoform Company, Ltd., Lysoform Works, Tower Bridge, London, S.E.; or Messrs. Thomas Christy and Co., 4-12, Old Swan Lane, London, E.C.

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## A NEW BINAURAL STETHOSCOPE.



THE KESTERTON BINAURAL STETHOSCOPE.

Our attention has been drawn to a new form of binaural stethoscope, which we believe will meet with the approval of many physicians specially engaged in chest work. The instrument is known as Kesterton's Bin-AURAL STETHOSCOPE.1 Dr. R. Watson Councell has strongly recommended it. The instrument is extremely light and portable. It conducts sounds excellently. There is only one rubber tube instead of the usual two, which is an advantage considering how readily rubber perishes. The locking arrangement is very simple and efficient, whilst the special shape of the joint causes that part to act as a sounding-box. The chest-piece is reversible, the larger end being used for general, and the smaller for intercostal or supraclavicular, examinations. If preferred, other forms of chest-piece can be supplied.

#### "VAPOROLE" AROMATIC AMMONIA.

The preparation of Aromatic Ammonia, which is provided in "Vaporole" form, is a particularly valuable one for tuberculous patients and other delicate subjects.\(^1\) The ammonia is enclosed in a thin glass capsule, which is enclosed in a silken sac of absorbent material, and can be easily broken and the contents inhaled. For cases liable to fainting attacks, or requiring a prompt stimulant, these ingenious contrivances are invaluable. Their compact form and convenient arrangement (they are packed in aluminized boxes containing twelve vaporoles) render them particularly valuable for easy carriage in the pocket, and much more satisfactory than the old-fashioned "smelling-salts."

<sup>&</sup>lt;sup>1</sup> We are informed by the makers that it can be obtained of all dealers in surgical instruments,

<sup>&</sup>lt;sup>2</sup> "Vaporole" Aromatic Ammonia is supplied by Messrs, Burroughs Wellcome and Co., Snow Hill, London, E.C.

#### NOTES.

## THE NATIONAL ASSOCIATION FOR THE PREVENTION OF CONSUMPTION.

With commendable promptness the Transactions of the Annual Conference at Caxton Hall, Westminster, July 19-21, 1911, have appeared in handsome book-form.\(^1\) Dr. J. J. Perkins and his colleagues have thereby provided anti-tuberculosis workers throughout the land with an armamentarium which should prove invaluable during the coming winter's campaign. The papers, which number twenty-seven, are conveniently grouped under the headings of education, the machinery of detection, treatment, after-care, and administrative and financial aspects. The volume also contains the admirable opening address of Mr. John Burns, the President of the Local Government Board, and lists of the officers of the Association, the Executive Committee of the Conference, and the delegates. It is unfortunate that no index has been provided, as such would have added greatly to the usefulness of the Transactions.

## THE SEVENTH INTERNATIONAL CONGRESS AGAINST TUBERCULOSIS.

Unfortunately, the great gathering of experts in the anti-tuberculosis campaign, which was to have taken place from September 24 to 30, has been postponed till the spring of next year. The coming of the cholera scourge to Italy has made this course inevitable. It is little less than a calamity that this world-gathering has had to be deferred, but in spite of all it may be hoped that the Congress in Rome next Easter will have gained in interest and influence by the unavoidable delay. We shall trust to be able to give full particulars of the new plans in our next issue.

#### THE NATIONAL SANATORIUM ASSOCIATION.

At a time when all minds are set to secure some more satisfactory way for rendering medical assistance to workers smitten by tuberculosis, the work of the National Sanatorium at Benenden deserves study. It is directed by the National Association for the Establishment and Maintenance of Sanatoria for Workers suffering from Tuberculosis, of which body Mr. C. H. Garland is Chairman of Council. According

<sup>1 &</sup>quot;National Association for the Prevention of Consumption and Other Forms of Tuberculosis: Transactions of the Annual Conference at Caxton Hall, Westminster, July 19-21, 1911." Pp. 220. London: Adlard and Son, Bartholomew Close, E.C. 1911. Price 28. 6d.

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to the Fifth Annual Report, recently issued, during 1910, 265 patients were discharged, and of these 38.5 per cent. are recorded as "arrested." Excluding third-stage cases, 95 per cent. are stated to have been



improved by residence in the sanatorium. The average stay was thirteen weeks three days. Through the courtesy of the Council we have been permitted to give an illustration of the sanatorium.

#### PATHS OF PROGRESS.

The coming of the Chancellor's scheme, as portraved in the National Insurance Bill, for providing medical assistance for necessitous tuberculous cases, has aroused widespread interest in the subject of tuberculosis generally, stimulated serious study of anti-tuberculosis measures, and aroused discussion concerning ways and means whereby provision may be made for the adequate treatment of consumptives and other tuberculous subjects. In recent conferences and gatherings of medical men, sanitarians, and other leaders of thought and action, the problems relating to tuberculosis have occupied prominent places. All this is indicative of real progress.

Dr. Matthew Hay, M.O.H., Aberdeen, has issued a special report on the prevalence of tuberculosis in his northern city.1 It is full of information, and should be in the hands of all medical officers of health. As a model for the local study of tuberculosis it deserves careful study. If arrangements could be made for a similar investigation to be taken in all our cities, invaluable data would be obtained which would indicate more clearly the safest paths along which advance might be made.

Much discussion has recently taken place regarding the relative merits of sanatoria, tuberculosis dispensaries, and so-called tuberculin dispensaries. Dr. A. Mearns Fraser's description of the Tuberculin Dispensary at Portsmouth is timely, and provides particulars of the treatment by tuberculin which is there afforded.2 It is estimated that the complete cost will be £600 per annum.

Dr. Hope's annual reports on the health of the City of Liverpool are always full of matters of far-reaching importance. The recently issued volume contains a series of excellent illustrations of life and work at the Fazakerley Hospital for Consumptives.8

The last report of Glenafton Sanatorium at New Cumnock is a valuable record of good work which Dr. Edward E. Prest is carrying out for the Pulmonary Phthisis Board of the Ayrshire Sanatorium. Illustrations of the buildings are given.

"The Twelfth Annual Report of the Society for the Prevention and Cure of Consumption in the County of Durham" has recently been issued, and contains pictures of the Stanhope and Wolsingham Sanatoria, the Medical Superintendents of which are Dr. John Gray and Dr. E. G. D. Menzies.5

<sup>1 &</sup>quot;Notes on Tuberculosis in Aberdeen." By Matthew Hay, M.D., LL.D., Medical Officer of Health for the City of Aberdeen, Reprint from the "Annual Report on the Health of the City for 1909." Aberdeen: Public Health Department.

<sup>1911.

2 &</sup>quot;Report on Sanatorium and Tuberculin Treatment, together with a Description of the Portsmouth Municipal Tuberculin Dispensary." By A. Mearns Fraser, M.D., Medical Officer of Health. Pp. 31. Portsmouth: W. H. Barrett, Ltd.,

M.D., Medical Officer of Fleatin. 2p. 3...

114, High Street. 1911. Price 1s. net.

3 "Report of the Health of the City of Liverpool during 1910." By E. W. Hope, M.D., D.Sc., Medical Officer of Health. Pp. 242. With plates and plans. Liverpool: C. Turling and Co., Ltd., 53, Victoria Street. 1911.

4 "Third Annual Report of the Ayrshire Sanatorium under the Public Health Authorities Combination." By Edward E. Prest, M.A., M.D., B.C., Medical Superintendent. Pp. 26. With plans and illustrations. Ayr: Advertiser Office.

<sup>1911.

&</sup>quot;The Society for the Prevention and Cure of Consumption in the County of Wish illustrations. Sunderland: Durham: The Twelfth Annual Report." Pp. 44. With illustrations. Sunderland: R. Youll, 28, Northumberland Street. 1911.

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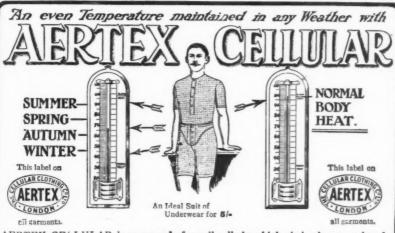
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from the tubercle bacilli. The rate of recovery is, from reports already received by us, about 95 per cent. in early cases, and from 80 to 85 per cent. where the disease has been allowed to become more advanced.

Dr. Dutton's notes on three of his cases were given in the Medical Times

of August 26th, 1911.
"Miss M. W.," he writes, "has now no physical signs in either lung pointing to tuberculosis (she was discharged from a sanatorium as incurable). She has hardly any cough, no expectoration, and has returned to work and does her duty without fatigue even in this tropical heat.'

" Mrs. M. H. had hæmoptysis, which was very alarming, when I first called to see her. She had been treated for a long time in two sanatoriums in Switzerland, and my aid being requested, I immediately injected her with Pneumosan. The vomiting of blood at once stopped, and after four injections the sputum was not tinged with blood. After the second series the symptoms were as follows: Cavity in right lung much decreased in size, cough and expectoration much reduced, appetite and strength markedly increased, temperature normal. I then gave her the third series of injections, and the improvement in her condition leads me to hope that a sea voyage will prevent any relapse. This case is a severe test for Pneumosan."

"Mr. W. P. is another very satisfactory case. He had repeated attacks of hæmoptysis, and the last attack led him to agree to go under the Pneumosan treatment. Bacilli were found in the He has had four series of sputum. The lungs have entirely injections. cleared up except a small amount of dulness over the right apex, the former seat of the disease, which has no doubt undergone fibrous contraction. I sent him to the doctor who first examined him, and he endorsed the diagnosis. There are now no tubercle bacilli.'

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Further cases briefly reported also are very favourable to the treatment.

Dr. J. R. B. writes: "A male patient, with a very bad family history, dulness of both apices, with moist sounds, cough, abundant expectoration and pulmonary hæmorrhage, was injected with Pneumosan, and after seven injections the hæmorrhage ceased and the other symptoms cleared up. The patient has now gone back to business and is arranging for a holiday."
Dr. E. P. E. writes: "To a male

patient with a bad family history I gave three series (10 each) of injections with The patient has gained Pneumosan. weight and he is decidedly better.

Dr. F. D. writes: "A case in which I tried Pneumosan was a woman with profuse hæmorrhage. I injected her for a week, and the bacilli (which had been plentiful in the first specimen examined) had quite disappeared after the second series of injections."

From these observations, coupled with numerous other reports, Dr. Dutton affirms that sufficient work has been done for the general practitioner to consider it a safe method of treatment for tuber-

cular disease.

Communications should be addressed to the Secretary, Pneumosan Chemische Fabrik, 157, Great Portland Street, London, W.

Since the foregoing was written, further encouraging reports have been received from medical practitioners, and excellent results have been recorded from a prominent hospital in the northwest of England.

#### Articles Promised for future numbers of the Journal.

ANDERSON, A. JASPER, M.A., M.B., D.P.H.: "Tuberculosis in Cape Colony."

BAIN, W., M.D., M.R.C.P.: "The Effects of Various Diets on the Opsonic Index in Tuberculosis."

BERRY, JAMES, F.R.C.S.: "Tuberculous Hip Disease."

CABOT, RICHARD C., M.D.: "The Home Treatment of Tuberculosis."

CLEMOW, F. G., M.D., D.P.H. F.R.G.S.: "Tuberculosis in Turkey."

COATES, HAROLD, M.D.: "Disinfection of the Habitations of Consumptives."

DABBS, G. H. R., M.D.: "Consumption and Literature."

FRENCH, J. GAY, M.S., F.R.C.S.: "Tuberculin in the Treatment of Laryngeal Tuber-culosis."

GIBSON, G. A., M.D., F.R.C.P.E.: "Tuberculosis Pericarditis."

GRANT, DUNDAS, M.D.: "Tuberculosis of the Upper-Air Passages."

HARE, FRANCIS, M.D.: "New Points in the Very Early Diagnosis of Consumption." HARING, N. C., M.B., M.R.C.S.: "Prognosis and Physical Signs in Pulmonary Phthisis."

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HUNTER, W., M.D., F.R.C.P.: "The Anemias of Tuberculosis."

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LACK, H. LAMBERT, M.D., F.R.C.S.: "Cases of Antral Suppuration resembling Phthisis." LEEDHAM-GREEN, C. A., Ch.M., F.R.C.S.: "Experience of Surgical Cases of Tuberculosis treated with Tuberculin controlled by the Opsonic Index."

LESLIE, R. MURRAY, M.D., M.R.C.P.: "Points in the Management of Hæmoptysis."

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OWEN, EDMUND, F.R.C.S.: "Tuberculosis from a Surgical Point of View."

PERNET, GEORGE, M.D.: "Varieties of Tuberculosis of the Skin, and their Appropriate Treatment."

POTTENGER, F. M., M.D.: "Is the Present Method of Feeding Tuberculous Patients Satisfactory?"

REID, G. ARCHDALL, M.B., F.R.S.E.: "Heredity in Relation to Tuberculosis."

RHODES, HERBERT, M.D.: "Errors in the Management of Early Pulmonary Tuber-

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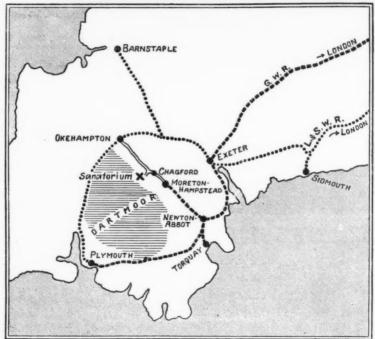
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